RUSS OLSON VOLUME 29B

CAR BUILDING COMPANIES

Description

An introduction to various car building companies such as the Northern Car Company based in Robbinsdale, MN, including its predecessor companies based in Waterloo, IA.

Sub-divisions Within This Volume

- Contents of the entire binder

NORTHERN CAR COMPANY

Robbinsdale, Minnesota

An ongoing research paper on the
history of streetcar manufacturing
in Waterloo, Iowa in the 1880s.

by:

ROBERT J. LEVIS
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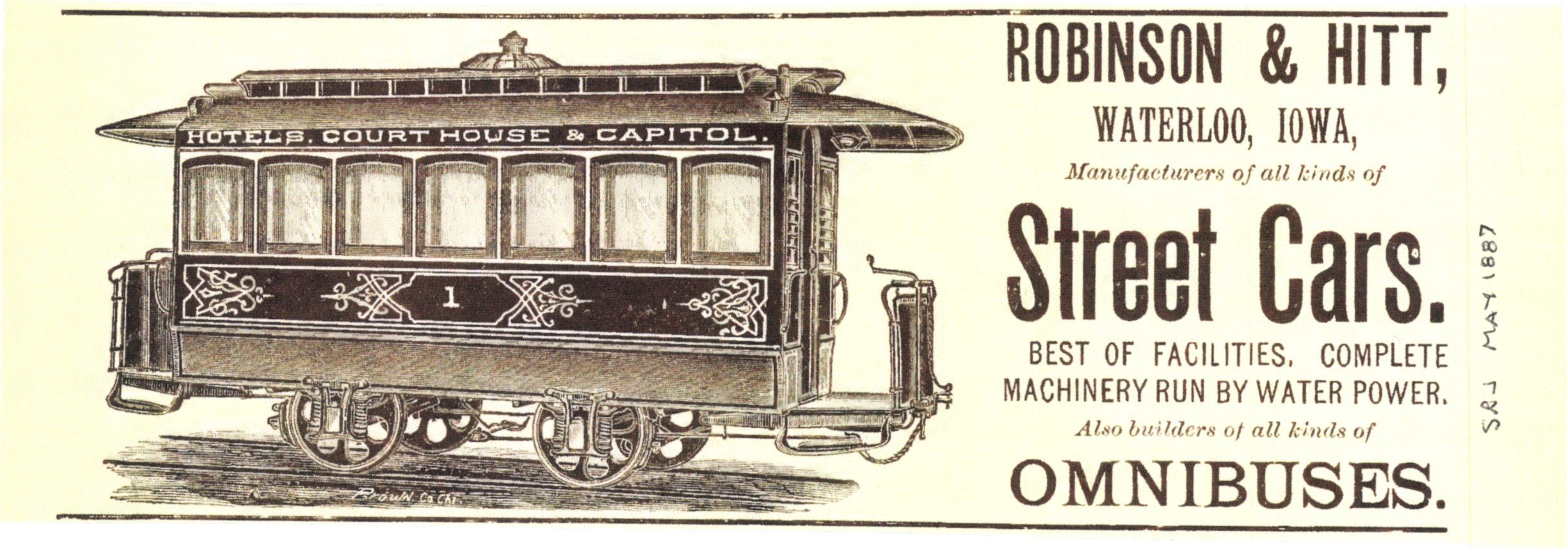
Initial draft, Feb. 1997



ROBINSON & HITT,
WATERLOO, IOWA,
Manufacturers of all kinds of
Street Cars.
BEST OF FACILITIES. COMPLETE
MACHINERY RUN BY WATER POWER.
Also builders of all kinds of
OMNIBUSES.

SRJ MAY 1887

STREETCAR MANUFACTURING IN WATERLOO, IOWA IN THE 1880s BY ROBINSON & HITT / ROBINSON & MOAN

Waterloo, Iowa was home to a small, but flourishing, streetcar building operation in the late 1880s. The roots of this activity go back some fifteen years previous.

In 1870 a carriage manufacturing business was established by E. R. Hitt on Commercial Street, near West 6th Street. An 1873-74 Directory for Waterloo lists the firm of Hitt & Chapman as carriage and wagon makers located at West 6th & Commercial Streets. Principals were Sylvanus B. Hitt & Robert W. Chapman.

In 1875 a foundry and machine shop was established by W. S. Robinson in the same general area of Waterloo.

An advertisement ran in the November 29, 1882 issue of the WATERLOO (Iowa) COURIER newspaper for carriages built by S. B. Hitt & Company, Commercial Street, west side, Waterloo.

On November 7, 1883 the COURIER reported that a sale of S. B. & Company was pending. W. S. Robinson hoped to operate the company and Mr. Hitt would be the foreman. The new firm of Robinson & Hitt began operations on November 13, 1883. The new firm most likely used the facilities of both the old Hitt carriage building operations and the Robinson foundry/machine shop. The new firm was apparently a partnership of W. S. Robinson and E. R. Hitt with S. B. Hitt as plant manager. The relationship, if any, between E.R. Hitt and S. B. Hitt is unknown. The work force reportedly consisted of (13) men with (3) more to be added soon. The product line was made up of a variety of horse-drawn wagons, carriages, and omnibuses.

The COURIER reported that on January 28, 1885 W. S. Robinson was in New Orleans showing an omnibus built by Robinson & Hitt at the Cotton States Exposition. The June 17, 1885 issue of the COURIER reported that Robinson & Hitt had been notified that they had won a gold medal for their omnibus shown at the New Orleans exposition. Also, the firm was now builing a streetcar for the South Chicago Street Railway Company. This appears to be their initial venture into streetcar building. The population of Waterloo was still less than 6,500, but cities all over the upper midwest would soon be operating streetcars built in Waterloo.

The 1886 Waterloo City Directory lists Robinson & Hitt as carriage and wagon manufacturers located on Commercial Street. W. S. Robinson and S. B. Hitt are given as the propreiters.

The COURIER of January 6, 1886 reported that Robinson & Hitt had purchased the old Eureka Skating Rink and would move it across the Cedar River and add it to their factory where it would make a 60' X 100' building. They also announced plans for a 40' X 70' blacksmith shop. On January 18th (13) employees were laid-off.

The COURIER issue of April 7, 1886 stated that J. M. Moan of Des Moines was a Sunday guest in Waterloo. This is likely the same J. M. Moan that would become a principal in the firm a couple of years later.

The May 26, 1886 issue of the COURIER reported that Robinson & Hitt were building a 40' X 60' two-story addition to the factory.

On October 27, 1886 the COURIER reported that they had just printed 15,000 copies of an illustrated folder for Robinson & Hitt showing their wagons, buses, streetcars, etc. A reproduction of the 1885 gold medal won at New Orleans adorned the cover.

The COURIER issue of October 19, 1887 stated that a 60 H.P. boiler and a 40 H.P. engine were being installed in the Robinson & Hitt factory.

A major change came in 1888 with J. M. Moan joining the firm and the departure of S. B. Hitt. The April 12th issue of the COURIER reported that a contract was signed by J. M. Moan to build & equip the Columbus (Nebraska) Motor Railway Company. The May 30th issue of the COURIER states that Robinson & Moan are having a large amount of business both building streetcar lines and the cars to operate them.

The 1888-89 Waterloo City Directory lists the following: Robinson & Moan Company; W. S. Robinson, President & J. M. Moan, Secretary & Treasurer. Successors to Robinson & Hitt, manufacturers of omnibuses, landaus, and streetcars. Located at 725, 727, and 729 Commercial Street.

A strike was reported at the Robinson & Moan factory in the June 13, 1888 issue of the COURIER. Employees were striking for weekly pay instead of monthly.

On August 15, 1888 the COURIER reported that S. B. Hitt was now the Superintendent of the Calumet Car Company near Chicago.

W. S. Robinson and family were moving to Chicago according to the COURIER issue of October 24, 1888. This was apparently to establish a sales office in Chicago, but has led to reports that the firm relocated there. However, manufacturing operations remained in Waterloo.

The COURIER issue of May 22, 1889 stated that two cars were recently shipped to Oshkosh, Wisconsin and "were the finest cars ever built here". They were also the first cars built that had the entire running gear (except wheels) made here.

In the fall of 1889 the firm left Waterloo and moved to the Minneapolis area. Exact reasons for the move are not clear, but ongoing problems with the shipment of finished cars, freight rates in particular, was probably a factor. Also, the industry shift to electric cars likely indicated an upcoming need for more production and storage space. The COURIER issue of November 6th reported that enough machinery had already been moved to Minneapolis to begin work there on an order for ten streetcars for Akron, Ohio. About six carloads of machinery had already been moved and approximately that many more remained to be moved. Thus, Waterloo's time as a streetcar builder was ending.

ROBINSON & HITT / ROBINSON & MOAN

Construction List

It is almost certain that no offical R&H / R&M records exist. Thus, any attempt to document the company's history and production has to be assembled from available sources - mostly the local newspaper (THE WATERLOO COURIER). This construction list relies heavily on news stories from the COURIER, however it is unlikely that every car produced was reported in the paper. Also, researching old newspapers on microfilm is tedious work and it is all too easy to miss something. In view of the way this list was assembled, it is undoubtedly incomplete. Just how incomplete is a matter of conjecture.

In addition to building cars, R&H / R&M also contracted to build the street railway itself in several cities. Where this fact is known it is so noted in the construction list.

Production of cars at Waterloo was almost entirely 4-wheel horsecars, the majority of which were probably narrow gauge. An exception to this was the order for double truck cars for the Sioux City & Highland Park motor line in November 1887. Unless otherwise noted, all cars listed here were likely 4-wheel horsecars.

The COURIER usually only reported that cars were being shipped to a particular city and generally included the number of cars shipped. Thus, this list will normally only indicate the city that the cars were shipped to, not the actual customer. If the name of the customer is known it is listed. Further research would be needed to determine the actual customer for each order.

MAY 14 1997

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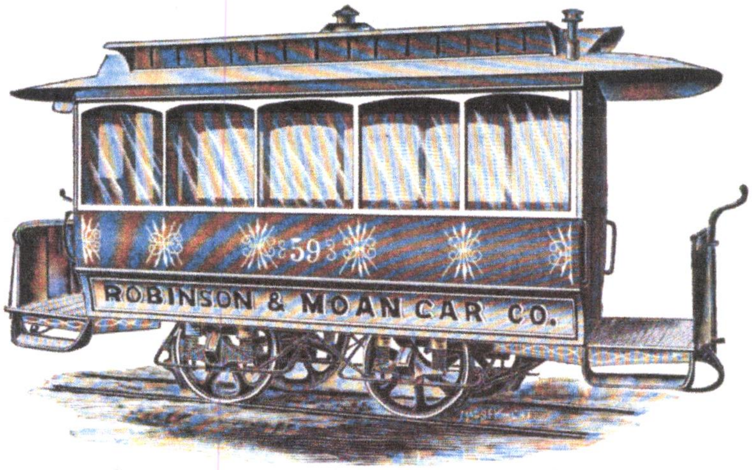
WATERLOO, IOWA 50701

ROBINSON & MOAN CAR CO.



W. S. ROBINSON,
President.

J. M. MOAN,
Secretary.

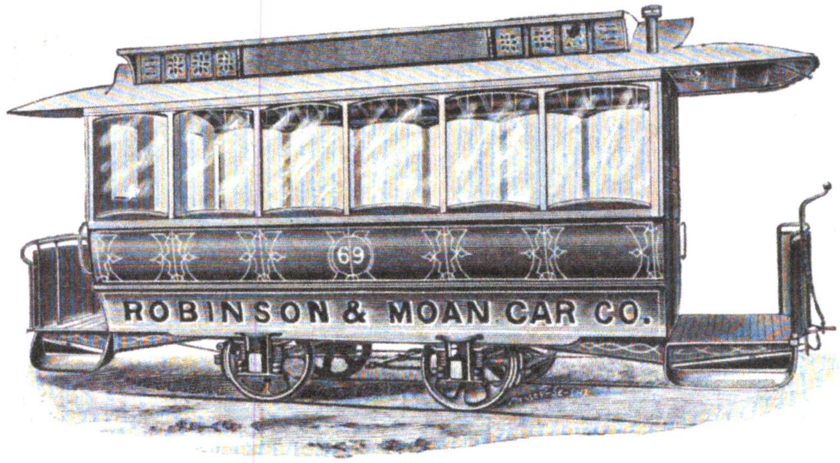
MANUFACTURERS OF ALL KINDS

Electric, Cable, Motor and Horse Cars.

WE USE NOTHING BUT THE BEST MATERIAL!

HANDSOMEST DESIGNS!

AND SELL AT LOWEST PRICES.



Office and Factory, Minneapolis, Minn.

Chicago Office, 353 The Rookery. Western Office, Sioux City, Iowa.

THE LARGEST EXCLUSIVE STREET CAR WORKS IN THE UNITED STATES.

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R&H / R&M CONSTRUCTION LIST

Built	Destination / Customer	Quantity / Type
6/85	South Chicago, Ill. (S. Chicago St. Ry.)	(1) open (1) closed
7/85	South Chicago, Ill. (S. Chicago St. Ry.)	(1) closed
7/85	Milwaukee, Wisc.	(1) closed
10/85	Waterloo, Iowa (Waterloo Street Ry.)	(2) closed
11/85	South Chicago, Ill. (S. Chicago St. Ry.)	(1) closed
5/86	Mankato, Minn.	(3) closed
8/86	Des Moines, Iowa (Broad Gauge St. RR Co.)	(6) closed
11/86	Waterloo, Iowa (Waterloo Street Ry.)	(1) closed
11/86	Freeport, Illinois (see note "A")	(4) closed
6/87	Hastings, Nebraska	(6) closed
8/87	Superior, Wisc. (Douglas County St. Ry.) (see note "B")	(3) closed
8/87	Fremont, Nebraska	(4) closed
8/87	Hastings, Nebraska	(4) closed
9/87	Kearney, Nebraska	(4) closed
9/87	Grand Island, Nebraska	(4) closed
9/87	Hastings, Nebraska	(4) closed
9/87	South Sioux City, Nebraska	(1) closed
9/87	Fremont, Nebraska	(2) closed
9/87	Centerville, Iowa (People's St. Ry.)	(2) closed
10/87	Sioux City, Iowa (Sioux City & Highland Park Railway Co.)	(10) cars see note "C"
12/87	Davenport, Iowa	(4) closed
5/88	Fort Madison, Iowa (Ft. Madison St. Ry.) (see note "A")	(2) open (4) closed
5/88	Sioux Falls, South Dakota	(2) closed
5/88	York, Nebraska (see note "A")	(4) closed
7/88	Columbus, Nebraska (Columbus Motor Ry. Co.) (see note "A")	(2) closed
7/88	Nevada, Missouri (Nevada City Ry. Co.) (see note "A")	(2) closed
5/89	Fremont, Nebraska	(2) open
5/89	Oshkosh, Wisconsin	(2) open
5/89	Fort Madison, Iowa (Ft. Madison St. Ry.)	(2) open

MAY 14 1997
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R&H / R&M CONSTRUCTION LIST

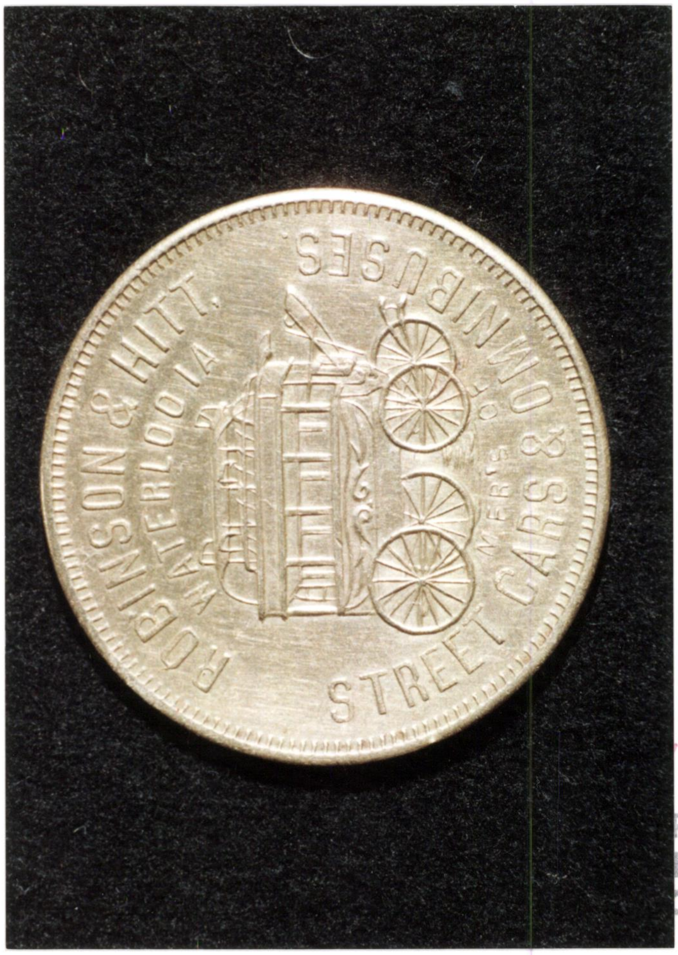
(2)

5/89	Joliet, Illinois (Joliet St. Ry. Co.)	(2)	closed
6/89	Yankton, South Dakota	(2)	closed
8/89	Joliet, Illinois (Joliet St. Ry. Co.)	(4)	closed

Note "A"
R&H / R&M were the contractors that built the street railway system in this city as well as building the cars listed.

Note "B"
This information courtesy of J. J. Kreuzberger.

Note "C"
This order consisted of (10) double truck cars consisting of (4) sixty passenger summer (open) cars and (6) flat cars.


ROBINSON & HITT.
WATERLOO IA
OMNIBUSES
MFR'S OF
& STREET CARS

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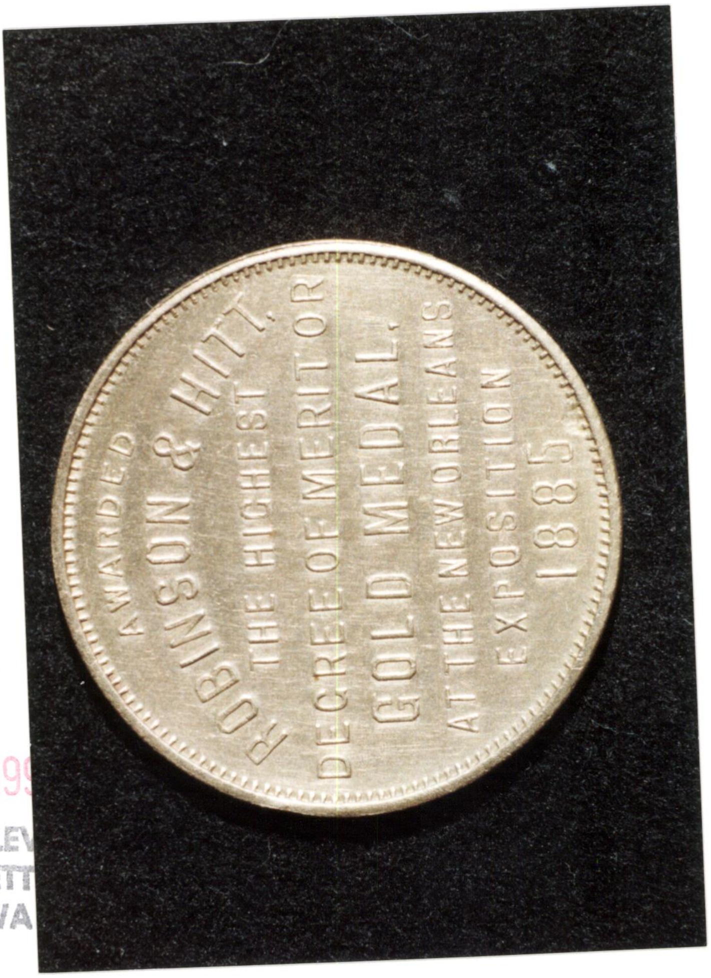
RT J. LEV
HACKETT
D, IOWA


AWARDED
ROBINSON & HITT,
THE HIGHEST
DECREE OF MERIT OR
GOLD MEDAL,
AT THE NEW ORLEANS
EXPOSITION
1885

ROBINSON & HITT / ROBINSON & MOAN

THE GOLD MEDAL

The February 4, 1885 issue of the WATERLOO (Iowa) COURIER reported on a letter dated January 28th from W. S. Robinson in New Orleans where he was showing an Omnibus at the New Orleans Exposition that had been built by R&H in Waterloo. Later, the June 17th issue of the COURIER reported that R&H were notified that they had been awarded a gold medal for their Omnibus exhibited at the New Orleans Exposition.

The next mention of the medal was in the COURIER issue of October 27, 1886 when it was stated that the COURIER had printed 15,000 copies of a twelve page illustrated folder of R&H products. This included photos of streetcars ready for delivery. (Apparently what we would call Builder's Photos.) Also mentioned was that a reproduction of the 1885 GOLD MEDAL adorned the cover.

Natural curosity now asks was there ever a "GOLD MEDAL", or was this just a name on a fancy paper certificate or a ribbon? I think an actual medal was awarded, but whether the material it was struck from was actually gold will probably never be known. A couple of things lend credence to the existence of the medal, either gold or some other metal. First of all, the reproduction of the medal on the cover of the 1886 advertising folder suggests it probably did exist. Secondly, I own two identical examples of what are likely reduced size copies of the original medal. These are struck from what appears to be brass and are 1.280 inches (32.5 MM) in diameter. The front side reads "Robinson & Hitt, Waterloo Ia. Mfr's of street cars & omnibuses." Also shown is a 3/4 view of an Omnibus - presumeably the one that won the medal. The reverse side reads "Awarded Robinson & Hitt, the highest degree of merit or gold medal, at the New Orleans Exposition 1885".

THE GOLD MEDAL

The existence of these "copies" only leads to more questions. Why were they made and how were they used? A likely scenario might be for advertising purposes - these might have been given to prospective customers of any of the various R&H products. Another possibility might be as an award to R&H employees as a token of appreciation from the management. One, or both, of these possibilities might be accurate. Or, something totally different might be the real reason for their existence. Likely, we will never know. However, the fact that a couple of them have survived for 115 years is quite remarkable.

Robinson & Hitt is gone, but not forgotten.

Robert J. Levis
419 S. Hackett Rd.
Waterloo, IA 50701

April 20, 2000

NORTHERN CAR COMPANY

Robbinsdale, Minnesota

The two manuscripts present the history taken from newspaper articles and trade journal publications. The first, by Robert Levis, covers the history of the predecessor companies in Waterloo, Iowa. These were Robinson & Hitt and Robinson & Moan. The second, by Homer Benton, covers the history of the successor, Northern Car Company, in Robbinsdale, Minnesota. Supplemental notes and comments from other sources are given below.

Officers and Directors

The firm was re-organized as Northern Car Company under the laws of Iowa July 11, 1890. Officers were: C. P. Jones, president; J. M. Moan, vice-president; and C. E. Mabie, secretary.

During 1891 the officers were: C. P. Jones, president and treasurer; A.. B. Robbins, vice-president; George P. Stearns, secretary; and W. B. Manier, superintendent. George Brimhall, a Robbinsdale pioneer, assisted the company financially.

The company was again re-organized under the laws of Minnesota October 31, 1891. Incorporators were C. P. Jones, D. M. Gilmore, W. E. Steele and S. S. Thorpe. The board of directors comprised Jones, Gilmore, Thorpe, Andrew B. Robbins, J. M. Bartlett, N. F. Griswold, F. W. Forman and J. D. Blake. Officers were: C. P. Jones, president; W. E. Steele, vice-president; D. M. Gilmore, treasurer and general manager; and G. P. Stearns, secretary. In 1892 Charles P. LOVELL of Minneapolis was a driector.

Car-building Plant

The carbuilding plant was located near the carhouse of the North Side Street Railway at 42nd Ave. N. and Hubbard Ave. N., at approximately the 1983 site of the City of Robbinsdale water tank. Robinson & Moan began operation here October 15, 1889.

The original and main building was 60' x 300', two-story, frame, built in 1889. An addition to the plant was built in 1891. The completed facility consisted of two two-story frame buildings, one 60' x 300' and the other 60' x 200'. About 150 to 200 persons were employed. The capacity was variously reported as one car per day, seven cars per week, ten cars per week, and 45 cars per month.

On May 7, 1892, a fire destroyed both buildings along with finished and partly-finished cars, including some for Minneapolis-St.Paul and Rockford, Illinois. Plans were subsequently announced for construction of a new plant north of the Soo Line railroad Shoreham Shops in the Sandy Lake area of Minneapolis. The plans never materialized, apparently due to difficulties of financing and the 1893 financial depression, and the company went out of business.

CONSTRUCTION LIST

I assume that the Built Date in the Robert Levis manuscript (Robinson & Hitt/Moan) is the newspaper article date. The Homer Benton manuscript on Northern Car Co. also has a construction list,but without dates. The date of the trade journal article in the main body could be used but the interval between the event and the printing date of the various publications together with the general lack of specific information compared to the newspaper arrticle reduces the accuracy. There are some orders missing from as well as some differences in the Homer Benton construction list so I have updated and rewritten the construction list in chronological order as follows.

September 1889 Yankton, S.D. (Yankton Street Railway); Fort Madison, Iowa (Fort Madison Street Railway); Oshkosh, Wisc. (Oshkosh Street Railway); Joliet, Ill. (Joliet Street Railway) apparently duplicate 1889 orders in the Robett Levis manuscript. Some (all?) of the Joliet cars were electric cars.

September 1889 Dubuque, Iowa (Key City Electric Railway): open cars.
Lincoln, Nebraska

The Robbinsdale plant opened October 15, 1889. By December 19, 1889, six cars of a ten car order from Akron, Ohio, (Akron Street Railway) were ready for shipment.

April 1890 Elgin, Ill. (Elgin City Railway Co.)
June 1891: Three open cars of a new design under construction.
Chicago, Ill.
Canton, Ohio (Canton Street Railway)
Tiffin, Ohio (Tiffin Street Railway)
Centerville, Iowa (Peoples Street Railway)
Oskaloosa, Iowa (Oskaloosa Street Railway & Land Co.)
Chillicothe, Mo. (NOT Illinois) (Peoples Street Railroad Co.?)

Minneapolis, Minn. (Minneapolis Street Railway). This must refer to 20 single-truck open motor cars, #423-442. The MSR record cards carry a date of March 1891 on these cars.

June 1890 Grand Rapids, Mich.
Memphis, Tenn.

September 1890 Augusta, Georgia (Augusta Railway Co.)
Anaconda, Mont. (Anaconda Railway Light & Power Co.)
Tower City, Mont.
Galesburg, Ill.
Duluth, Minn. (Duluth Street Railway) Three single-truck closed motor cars, #44-46. Reported as under construction June 1891; `18'6" body, 26"7" overall.
September 1891: recently shipped. Also includes a description of the cars. DSR records carry a date of July 1891 on these cars.
Seattle, Wash. (Ranier Avenue Electric Railway) Four single-truck closed motor cars, #1-4. 1890. Refer to the supplemental information appended.
Seattle, Wash. (West Street & North End Electric Railway) Twelve single-truck closed motor cars and one single-truck freight motor car, November 1890. Refer to the supplemental information appended.
Tacoma, Wash. (Tacoma & Steilacoom Railway) January 1891: just finished a lot of cars equpped with Thomson-Houston motors and Tripp trucks. May 1891: completed 24 ft. [double-truck] suburban cars with two Thomson-Houston 15 h..p. motorsand Hubbard trucks. Includes description of the cars.
Milwaukee, Wisc. (Milwaukee Street Railway Co.) Two sample cars, one single-truck closed passenger motor car and one single-truck open passenger motor car, delivered in January 1892. Refer to the supplemental information appended.. (The manuscript has a curious entry from the Railroad Gazette dated April 29, 1892, that 70 cars were being built for Milwaukee.)
Sioux Falls, S. D. (South Dakota Rapid Transit & Railway Co.) Two single-truck closed passenger motor cars, #1-2, and two open passenger trailers, June 1890. Refer to the supplemental information appended. No mention has been made in the South Dakota electric railway history of a Washington Park & Spring Grove Railway.
Portland, Oregon. (Williamette Bridge Railway) Three single-truck closed passenger motor cars, probably early 1891. Refer to the supplemental information appended. No mention in the history of a Waverly & Woodstock railway company.

Date ? Des Moines, Iowa (Des Moines Electric Railway) The manuscript does not contain a reference to such an order. It is included in the construction list. I have also indepently found a referece to an order.

January 1891 Keokuk, Iowa (Keokuk Electric Street Railway & Power Co.)
Rockford, Ill. (West End Street Railway) Three passenger motor cars, #1-5, odd numbers only. Refer to the supplemental information appended.

February 1891 Bellingham Bay, Wash. (Bellingham Bay Electric Street Railway) Three single-truck closed passenger motor cars, #1-3. Refer to the supplemental information appended.
Anacortes, Wash. (Fidalgo City & Anacortes Electric Railroad) Four double-truck closed passenger motor cars. Refer to the supplemental information appended for a complete history of these cars.
Sioux City, Iowa. Made a shipment of combination cars to Sioux City this month. Must be the six double-truck closed passenger motor cars for the Riverside Park Electric Railway.
May 1891: 30 ft. suburban cars of Manhattan Elevated Ry. pattern.
June 1891: 28'0" body with vestibules, 34'0" overall. McGuire 20 "Hubbard" trucks, two Westinghouse 20 h.p. motors. Includes description of the cars. July 1891: inside length 26'0".
November 1891: six 26 ft. vestibuled double truck electric cars.
Refer to the supplemental information appended for additional details.

May 1891 Great Falls, Mont. (Great Falls Street Railway) Equipped with Thomson-Houston motors.
November 1891: recently filled an order for three single-truck 18'7" closed passenger motor cars.
Helena, Mont. (Helena Electric Street Car Co.) Two 20'0" vestibuled passenger motor cars with Manier truck and Westinghouse motors. Includes a description of the cars.
February 1892: cars under construction for Helena Rapid Transit Company.
Minneapolis, Minn. (Minneapolis Street Railway) Twenty single-truck 18' 6" closed passenger motor cars, numbered 503-522. MSR record cards carry a date of July 1891 on these cars.
June 1891: 20 cars under construction.
August 1891: recently shipped 20 cars; 18'7" body, 26' 7" overall, seven windows per side. Includes description of the cars. Also September 1891.

July 1891 Sioux City, Iowa (Sioux City Elevated Railway) Built four cars of 30 ft. length.
November 1891: recently completed two 30 ft. suburban cars for the Washington Park & Spring Grove Railway Co., Sioux City, Iowa.
November 1891: just delivered two 30 ft. suburban coaches to E. Hookinson of Siux City, Iowa.

November 1891 Superior, Wisc. (Douglas County Street Railway) Recently filled an order for nine 18' 7" closed passenger cars.
May 1892: DCSR about to add ten new cars.
June 1892: ready to ship the first of the new carbodies.
Ten cars is the correct figure: #110-119. Company records show a date of Oct/Dec 1891 for these cars.

November 1891 Winona, Minn. (Winona City Railway) Recently filled an order for five standard 16' 0" passenger carbodies.
February 1892: shipped the cars this month.
These would be #10-14; company records show a date of Dec 1891/Jan 1892 on the cars.
There also was an order for two open passenger motor cars, #15-16, which either were not built because of the May 7, 1892 fire or were unfinished and destroyed by the fire.

November 1891 St.Paul, Minn. (Northwest Thomson-Houston Company) Recently filled an order for one 27 ft. double truck car.
February 1892: A large and handsome vestibuled motor car mounted on double trucks will soon be tested on the Interurban line (St.Paul to Mpls.) Includes a description of the car.
March, April and May 1892: additional descriptions and operation of the car.

January 1892 Minneapolis, Minn. (Minneapolis Street Railway) Received an order for 16 18'7" closed passenger motor cars, the same size as those new running. Will be nubered 523-538, painted yellow and finished in cherry.

January 1892 Mpls./St.Paul, Minn. (Mpls. St. Ry./St.Paul City Ry.) Also rebuilding some 68 of the old cars to the same length 22' 0" as the one (#284) which is now running on the Bloomington Ave. line.
February 1892: the first rebuilt car (#528) has been put in service. Refer to the manuscript for details.
This order was for
(1) 38 cars for Mpls. St. Ry. from the Jones-built #263-302 series closed horsecars which had been converted to electric cars (after rebuilding they were renumbered 569-606) and
(2) 30 cars for St.Paul City Ry. from Stephenson and Brownell & Wight build horsecars which had been converted to electric cars. (after rebuilding they were renumbered 528, 541-569.
Apparently Northern Car Co. completed the 38 cars for Mpls. St. Ry. The May 1892 fire destroyed the plant before work could be started on the 30 cars for St.Paul City. Ry. These 30 cars were rebuilt by the St.Paul City Ry. ; the records carry a date of June 1892 on these cars.

March 1892 Spokane Falls, Wash. The mention of receipt of a complimentary letter received from the general manager of the system is the only reference found so far.

March 1892 Clinton, Iowa (Clinton Street Railway) About ready to ship cars to Clinton, Iowa.

March 1892 Rockford, Ill. (West End Street Railway) About ready to ship cars to to Rockford, Ill.
May and June 1892: May 7th fire destroyed many finished and unfinished cars, including some for Rockford, Ill.
We don't know how many cars were ordered, nor how many were destroyed in the fire; we do know that six cars were shipped, numbered 7-17 odd numbers only. Refer to the supplemental information appended.

March 1892 Minneapolis, Minn. (Minneapolis Street Railway) New Summer Cars and Motors now being built. Includes a description of the cars.
May and June 1892: May 7th fire destroyed many finished and unfinished cars, including some for Minneapolis and St.Paul.
June 1892: Shipped 11 34'0" open motor cars to Mpls. St. Ry. Includes a description of the cars.
June 1892: Just finished one of new carbodies for Duluth St. Ry., to be used at head of the incline.
The order was for 30 double-truck open passenger motor cars. 16 were to be new cars, #539-554.
14 were to be rebuilt from ex Mpls. Lyndale & Minnetonka Ry. open passenger trailers, #555-568.
Apparently Northern Car Co. completed the 14 rebuilt trailers, and 13 new cars, #539-551.
Of the new cars
(1) one car, #539 , was shipped to the Milwaukee Street Railway in 1893. Refer to the supplemental information appended.
(2) one car, #548, was shipped to Duluth at the request o Thomas Lowry for operation on the Highland Improvement Company's line at the top of the Incline Railway.
That left 11 cars for Minneapolis /St.Paul: #540-547,549-551.

CAR WORKS SOLD
Minneapolis Tribune (1867-1908); Jul 8, 1890;
ProQuest Historical Newspapers Minneapolis Tribune (1867-1922
pg. 5

CAR WORKS SOLD.

C. P. Jones and C. D. Mabie Buy Out Robinson & Moan.

The Robinson & Moan car works at Parker have been sold to C. P. Jones of Minneapolis, and C. E. Mabie, of Sioux Falls. The new company will take charge within a few days and will at once commence enlarging the works, it being the intention to double the capacity. This concern is the largest exclusive street car manufactory in the United States and its success attracted the attention of the capitalists. The Robinson & Moan car works were removed from Waterloo, Iowa, about a year ago, and works with a capacity of 300 cars annually and employing 125 men were built. Mr. Robinson will retire from the new company, but Mr. Moan will retain an interest; the management, however, being in the hands of the new owners. The name will be changed to either the Minneapolis Car company or American Car company. Mr. Jones owns the right of this country of the Hurricane snow plow which has proved so effective in California, and it is thought that a plant for its manufacture will be put in.

A NEW COMPANY
Minneapolis Tribune (1867-1908); Jul 16, 1890;
ProQuest Historical Newspapers Minneapolis Tribune (1867-1922)
pg. 5

A NEW COMPANY.

The Northern Car Company Succeeds the Robinson-Moan Car Company.

One of the most successful of Minneapolis' manufacturing concerns has been the Robinson-Moan Car company, and the constantly increasing demand for their productions has made increased facilities a necessity. This is now soon to be accomplished, and will result in the constant employment of from 200 to 300 men in Minneapolis building street cars.

The Robinson-Moan Car company was yesterday succeeded by the Northern Car company, a stock company which has a largely increased capital and additional men of brains and push to handle the business which so rapidly outgrew the facilities of the old firm. The officers of the new company are: C. P. Jones, well known as a resident of Minneapolis for the past 12 years, president; J. M. Moan, vice president, and C. E. Mabie, secretary and treasurer. Such rapid development was not anticipated in so brief a period by the firm as first constituted, and consequently the size of the plant and the amount of money invested were inadequate for the vast business which poured in upon them. They were flooded with large and small orders from all sections of the country and the plant was kept in operation day and night to keep up with them. To show how extensive the business of the concern is becoming it is only necessary to state that orders for cars were recently received from Augusta, Ga., Seattle and Tacoma, Wash., Anaconda and Tower City, Mont., Portland, Ore., Duluth, Minn., Grand Rapids, Mich., Elgin and Galesburg, Ill., Milwaukee, Wis., Akron and Canton, O., Lincoln Neb., Sioux Falls, S. D., and Minneapolis. Besides this negotiations are in progress for cars in many other cities, among them the largest in the country.

The gentlemen at the head of the new firm are men of business experience and capital, and, with their well known push and enterprise, will outdo the brilliant record of the company as at first organized, and will make Minneapolis as well known, the world over, as the manufacturing center for street cars as it is for flour and lumber.

An additional reason for the unprecedented success of this particular manufacturing business is the superior quality of the work turned out, it having attracted the attention of every street car company in the United States. The dry atmosphere peculiar to Minnesota is particularly adapted for the most perfect building of cars. The materials all season better and enable the builders to turn out finer work than can be constructed in Chicago or New York.

Mpls Tribune 1-13-1891

MANUFACTURING STREET CARS.

The Successful Enterprise of the Northern Car Company at Robbinsdale.

The Northern Car company at Robbinsdale is now running full time with an average of from 150 to 200 men, and has been put in excellent condition for car building. The present management has added new buildings, dry sheds, dry kiln and new machinery throughout, costing about $30,000, and this the president of the company says, has been done in four months, while at the same time over $100,000 of contract work has been shipped. The cars now completed and ready for shipment are models of beauty, especially the four 24-foot cars for the Fidalgo City & Anacortes railway on the Pacific coast, and seven for Tacoma, Wash. These cars seat 22 passengers comfortably. They are double truck cars with the Eames vacuum brakes, and all the accoutrements of a first-class passenger car.

This company has been greatly annoyed by being mixed up with the financial embarrassment of the old Robinson & Moan Car company. When the present management bought out the former company it paid for the same, assumed none of the liabilities, and is not in any way connected with it or in the least responsible for the delay in the payment of its bills. The new company has met all its paper promptly and paid accounts when due, and the present management says that arrangements have been made with men in the city of strong financial and business ability, who have identified themselves with the company and intend to make it one of the best and strongest of Minneapolis' manufacturing institutions.

Mpls Tribune 1-23-1891

FOURISHING CAR WORKS.

The Robbinsdale Plant Will Employ 375 Skilled Operatives.

At the annual meeting of the Northern Car Company of Robbinsdale, the following board of directors were chosen: A. B. Robbins, H. A. Town, W. S. Nott, C. P. Jones, W. B. Manier, George P. Stearns, of Minneapol, and C. E. Mabie of Sioux City. At the meeting of the board of directors, held immediately after, officers were chosen as follows: C. P. Jones, president and treasurer; A. B. Robbins, vice president, and George P. Stearns, secretary.

The works are reported in a prosperous condition, and the future outlook is very encouraging. An effort is now being made to secure sufficient capital to enlarge the factory so as to give employment to 375 skilled workmen, and turn out 10 finished cars per week.

Mpls Tribune 5-24-1890

A contract to furnish 50 cars for the Hinckley and Holmer Electric Car company, of Milwaukee, has been awarded to the Robinson & Moan Car company, of Minneapolis. The Laclede company, of St. Louis, put in a bid to fill the contract for $25 less per car, but in spite of this the local firm captured the prize. It is very likely that other orders will be given the Robinson & Moan company in the future by the Milwaukee corporation, for it controls franchises in different cities worth about $00,000,000. Mr. Hinckley, representing the purchasers, made a thorough investigation of the work of each manufactory before the contract was awarded, and without hesitation decided in favor of the Minneapolis firm on account of its superior work. The home company is now making large shipments to Chillicothe, Mo.

Mpls Tribune 12-4-1891

Will Make Steam Cars, Too.

The Northern Car Company, whose street cars have proved so satisfactory, will soon begin the manufacture of steam cars as well. Since the reorganization of the company the plant has been enlarged and the capital stock increased, and arrangements made to enlarge the business of the company to a considerable extent. There are now on the company's grounds, at Robbinsdale, three buildings, each 60x150 feet in size, and a paint shop 75x100 feet will soon be added. About two hundred men are employed, and the company will turn out one car per day. Orders have been received for street cars from Milwaukee, Helena, Seattle and other cities. (BRICK PAINT SHOP)

Mpls Tribune 12-17-1891

Milwaukee Buying Its Street Cars in Minneapolis.

Minneapolis furnishes Milwaukee with street cars as the result of the location of the convention here. The two circumstances might seem to have no connection, but the sale is the direct result of the convention victory, for H. C. Payne, of Milwaukee, who was here as a member of the national committee, bought the cars yesterday. He operates the street railway system of the Cream City, and when he was taken to visit the Northern Car Works by H. F. Brown, he was very much interested. Yesterday he placed an order for several cars with the company.

"Our street railway system is going to be newly equipped," he said, as he promenaded the lobby of the West last evening, "and it will take about 300 cars. If these cars I have ordered turn out as I expect them to, there is no reason why we shouldn't give the Northern Car Company the equipment of the entire system. It lies altogether with the railroads doing business in Minneapolis and your Street Railway Company to make that car industry one of the leading plants of the kind in the United States. The material for good cars is here and so is the workmanship. All that is needed to secure a good patronage for the concern is its appreciation right here at home. The cars we have ordered are 18-foot closed, and 8 and 12-seat open cars. I am very well satisfied with them, but we want to give them a thorough test before contracting for the entire 300."

Mpls Tribune 2-05-1892

A New and Novel Car Turned Out by the Northern Car Company.

Something of a novelty in the shape of an electric motor car has just been built at the shops of the Northern Car Company. It is a handsome vestibuled car, 35 feet in length, has 10 windows on a side and is mounted on double trucks with 30-inch wheels. It was built for the Thompson-Houston Company, and will probably go to Sioux Falls. The many novel features make the car a decidedly ~~convenient one.~~ Each end platform is vestibuled, the dash being solid wainscotting with sash above and glass doors on each side. In the summer time the windows can be lowered and the doors taken off, and in the winter the protections will shield both driver and conductor from the elements. The brake is operated with a lever like that on a cable grip and a patent gong touched lightly with the foot will ring 16 times or more. The car will seat about 40 passengers, and as for standing room, the wide aisle will easily accommodate 30 more. It is believed that this car solves the problem of protecting the motoneers from the cold.

Mpls Tribune 3-23-1892

The Northern Car Company to Double Its Facilities—Its Business Booming.

The Northern Car Company, whose works are at Robbinsdale, is the latest Minneapolis manufacturing concern to awake to the fact that it needs a larger plant. The shops are now so badly crowded with work that all the orders for cars cannot be filled and an immediate enlargement is on the books. One hundred and twenty-five men are now employed, but this number will probably be increased to 300 or over next January. That Minneapolis is now a recognized car building center the country over is evidenced by the fact that orders are pouring in from everywhere. Just at present the company is rebuilding 70 cars for the Milwaukee street railway system.

Probably the finest car ever placed on any street railway line has just been turned out by the Northern Company for the Minneapolis Street Railway Company. It is a vestibuled pattern, eight wheeled, and cost completed, exclusive of machinery, $1,800. A peculiar feature about it is that both the front and rear platforms are enclosed. The passengers enter through a door, and everyone has to pass the conductor, who collects the fares either as they enter or go out. The inside is elegantly finished, and it is said to ride as easily as a Pullman sleeper. It will be placed on the interurban line.

Mr. Lowry, after trying the cars manufactured in St. Louis, New York and other places, has come to the conclusion that those made right at home are better in every way than any made outside. He has consequently given the Robbinsdale people all they can do. Sixty-eight of his 12 and 16-foot cars are being rebuilt into 22-foot cars by cutting them in two in the middle and lengthening them to 22 feet. New sills are put in, extending the whole length, which are further strengthened by a steel plate covering the sill. About one-half of these are completed. The company are also building 16 entirely new open cars, 32 feet in length, which will be finished in about six weeks. The entire equipment will be ready and in service before the convention.

Mpls Tribune 1-01-1892

An officer of the Northern Car Company, which has an office in the Lumber Exchange, when asked to relate his experience in manufacturing in Minneapolis, said:

Our factory is located at Robbinsdale, a surburb of Minneapolis. The plant was originally started by some gentlemen from Iowa in the fall of 1889. In July 1890, C. P. Jones, of Minneapolis, in company with parties in Sioux City, Iowa, purchased the plant and incorporated under the laws of Iowa as the Northern Car Company.

In the fall of 1891, it being desired to increase the capital stock, and the Iowa parties having sold their interest in the company, and $150,000 of new capital having been subscribed by leading business men of Minneapolis and vicinity, it was deemed advisable by the new stockholders to reorganize the company under the laws of Minnesota, instead of amending the articles of the Iowa corporation, and Oct. 31 the Northern Car Company, of Minnesota, was incorporated. The new corporation purchased the plant, contracts, good will and all property belonging to the Iowa corporation and assumed all of its indebtedness. The first board of directors of the new corporation is composed of such representative men as J. M. Bartlett, W. E. Steele, F. W. Forman, N. F. Griswold, D. M. Gilmore, C. P. Jones, A. B. Robbins, S. S. Thorpe, and J. D. Blake, all of Minneapolis. The officers of the company are C. P. Jones, president; W. E. Steele, vice-president; D. M. Gilmore, treasurer and general manager; Geo. P. Stearns, secretary.

Since Mr. Jones's first connection with the plant it has been his chief aim to make this one of the best manufacturing industries in Minneapolis, and to this end the company has continually been adding the latest and most improved machinery and new buildings to increase the capacity, having just completed a new brick paint shop, 150x95 feet, until now the company has one of the best equipped street car manufactories in the United States, which is under the superintendence of W. B. Manier, formerly with the Gilbert Car Company, of Troy, N. Y., a gentleman who, having devoted his entire life to car building, is thoroughly posted in all the details of street car and passenger coach work.

The manufactured output during the past year was 112 street and suburban cars, at a valuation of $100,000, and with their new buildings and increased capacity it is expected to be able to turn out during the next year more than double the above amount, or an average of one car per day, and they already have orders for about one-third of that number. During the past year the company has built cars for some of the leading electric railway companies in the country, and have gained the reputation of making a first-class car, superior in many respects to what other factories are turning out. They have built for the Minneapolis Street Railway Company during the past year 36 of their standard cars with body 18 feet 7 inches long, and now have a contract for building more than 50 cars for the same company. This company will undoubtedly employ during the next year from 200 to 250 skilled mechanics, and it is sure to have the prosperity it deserves as a Minneapolis institution, composed of Minneapolis business men, and thoroughly equipped for building street and suburban cars of all descriptions and railway passenger coaches.

The prospect for trade in 1892 is unusually bright, as the company now has contracts for all the work it can turn out for several months, and there is a large demand for electric cars from all sections of the country.

CAR WORKS BURN
Minneapolis Tribune (1867-1908); May 7, 1892;
ProQuest Historical Newspapers Minneapolis Tribune (1867-1922)
pg. 1

CAR WORKS BURN.

The Plant of the Northern Car Company at Robbinsdale.

There Is No Fire Protection and the Flames Rage Unchecked—The Property Worth $100,000.

At 1:30 this morning the plant of the Northern Car Company, at Robbinsdale, took fire, and on account of insufficient fire protection was entirely wiped out in a few hours. The loss is in the vicinity of $75,000 or $100,000, of which amount not more than $10,000 represents the buildings, the remainder being the value of machinery and uncompleted cars, or cars which were finished and waiting shipment. As all the structures of the industry were of the character denominated as "poor risks," it is not probable that the insurance will more than half cover the total loss.

The Minneapolis fire department was not notified until the fire was well under way and then, on account of the distance to Robbinsdale, between four and five miles, the assistance that was sent, chemicals 4 and 1, did not reach the scene of the disaster until too late to be of any material assistance. As the works were completely isolated from the rest of the village, there was no work to be done to keep the fire from spreading and the apparatus was practically helpless.

Between 150 and 200 men were employed in the works, many of whom lived in Minneapolis.

The works were established something over two years ago and have had a rapid growth. There were altogether three buildings; the office, the wood working and construction department, and the machine shop. Of these, the wood working and construction building was the largest, being in the form of a letter L about 200 feet each way. The machine shop was enclosed in the two branches of the L and was 60x100 feet on the ground and one story in height. The main building was two stories in height, most of the woodworking machinery being located in the part of the structure nearest the railroad track and on the first story. In the part of the building which was farthest from and parallel with the tracks was the setting up department, and the entire second story was entirely devoted to the construction of the bodies of the cars. The office stood about ten feet from the main building on the side opposite the machine shop and was a one-story structure about 20x50 feet. All the buildings were of wood unprotected by any sheltling and highly inflammable.

Since the founding of the industry its business has steadily increased, and at the time of the fire a large order was being filled for the Milwaukee Street Railway Company. Many cars on the Twin City street railway lines were also built at the shops and the destruction of the plant, even though the loss is fully covered by insurance, is a serious thing on account of the loss of time.

In the building department there were about twenty cars in various stages of construction.

NOT QUITE SO BAD
Minneapolis Tribune (1867-1908); May 8, 1892;
ProQuest Historical Newspapers Minneapolis Tribune (1867-1922)
pg. 6

NOT QUITE SO BAD.

The Loss in the Car Works Blaze Much Less Than at First Supposed.

A meeting of the Northern Car Company directors was held yesterday afternoon and a careful comparison of salvage and insurance placed the total loss at between $30,000 and $35,000. There was altogether $80,000 insurance, placed with W. A. Barnes & Co., Thorpe Bros., Gale & Co., Corser & Co., and Josiah Thompson. The salvage, including the stock and cars in the new brick paint shop, which was saved, amounts to about $18,000.

The directors decided to rebuild at once and it is expected that the new plant will be completed within 60 days. Considerable more money will be expended upon the new buildings, which will be all of brick, and although the same general site will be used the disposition of the buildings will be changed in such a manner that they will not endanger one another in case of fire.

It has been determined that the fire originated in the engine room and that it was probably caused by a spark from the blacksmith shop which adjoins this building. The watchman detected the presence of smoke in the building at 12 o'clock, but could not find the fire until nearly 1:30, by which time it had gained considerable headway. Mr. Hilory, the watchman, was obliged to jump from a window to escape and in doing so broke a leg. About fifty of the skilled workmen employed at the works lost their entire outfits of tools variously valued at from $125 to $150 each. The books, papers, patterns and drawings which were in the office were all saved.

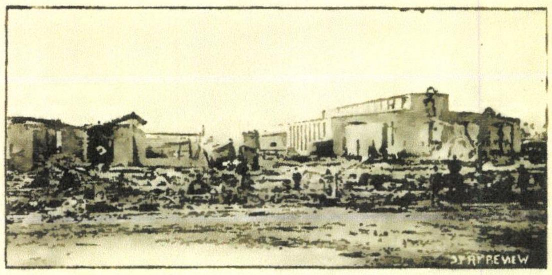
A new 12-room house owned by Leo Cook was set on fire by flying sparks and burned down. It was insured for $1,500.

The Northern Car Company has just received a contract yesterday from Milwaukee for 50 cars.

Street Railway Review 5-1892 235

NORTHERN CAR COMPANY BURNS BUT HAS ALREADY COMMENCED RECONSTRUCTION.

On the morning of May 7 the Northern Car Company, of Minneapolis, passed through the fire test to the extent of $60,000, but there was a full covering on insurance. The main plant was two stories high, frame, and built in "L" shape. The mill room was 160x160 feet in size; the construction room, 160x160; the blacksmith shop and engine room, 160 x 40. In addition to the main building there was a dry house, two sheds filled with the finest grades of hard wood stock, a tan house and the office building. All these were burned. The books and papers and drawings in the office building were saved, as it was late in burning. Considerable stock was also lost in the flames, notably large orders from St. Paul and one from Rockford, Ill., and the cars for the Minneapolis Railway, in all enough to keep the works full until July. The ruins were yet smoking when the directors, A. B. Robbins, W. E. Steele, D. M. Gilmore, C. P. Lovel, E. S. Corser, C. P. Jones, and Samuel Thorpe, decided to rebuild, reorganize and continue. The new Northern Car Company has a capital stock of $150,000, and the operations of reconstruction will begin at once. A. B. Robbins is president of the company, Geo. P. Stearns, secretary, and D. M. Gilmore, manager. The engraving presented, shows the ruins as they appeared when the meeting of the directors took place.



RUINS OF NORTHERN CAR COMPANY PLANT.

Street Railway Review 6-15-1892 357

ON LOWRY'S LAND.

The directors of the Northern Car Works, recently burned at Robbinsdale, held an important meeting recently, at which the question of a site for rebuilding was discussed and partially settled. If certain property owners in Northeast Minneapolis do the proper thing, it is certain that the works will be rebuilt on the Lowry tract at the city limits. The terms under which this is to be done, it is understood, include the gift of 10 acres of land to the works for a site and the taking of $20,000 worth of stock in the company by Mr. Lowry and his friends. If the deal goes through, as now seems probable, no time will be lost in getting to work at the buildings. The plant will be a very large one.

The insurance adjusters have allowed the Northern Car Works $60,000 for the loss it sustained when its plant was burned. The contents was $86,000, leaving a loss of $26,000. The total insurance on the plant was $80,000, but there was a salvage of $20,000.

Street Railway Review 11-15-1892 619

NORTHERN NOTES.

Suit has been commenced against the Northern Car Company, of Minneapolis, by Andrew B. Robbins, founder of Robbinsdale, where the car works were located, for the recovery of five notes of $5,000 each, payable in one, two, three, four and five years from October 31st, 1891. The car works were destroyed by fire on May 7th of this year, and since then, Mr. Robbins claims, the business has not been continued. He further states that on October 29th, 1892, the board of directors passed a resolution advising the winding up of the business and its dissolvement, and is now circulating a petition among its stockholders to this effect. The court granted him a temporary injunction.

Street Railway Review Dec 1891

C. B. Manier, superintendent of Northern Car Co., was connected with Gilbert Car Company for 23 years as workman, foreman and superintendent.

Designer of the Manier truck also.

Information on cars built for other systems extracted from various historical publications follows.

Illinois: Rockford

The West End Street Railway opened for service June 4,1891. Three passenger motor cars were purchased in 1891, numbers 1 to 5, odd numbers only. Six additional passenger motor cars were acquired during 1892, numbers 7 to 17, odd numbers only. The company later became the Rockford Traction Company, failed financially in 1895, and was consolidated with the Rockford Railway, Power & Light Company in 1898.

Iowa: Sioux City

The Riverside Park Electric Railway contracted for six motor cars and six trailers, all to be mounted on McGuire double trucks. The trailers were apparently never built, the railway instead using 14 trailers retained from the former steam operation. The motor cars were numbered 1-6. The carbodies were 26 ft. in length between bulkheads. The interior was finished in quartered oak and included the use of plate glass mirrors. Each car had two Westinghouse single reduction gear motors (30 h.p. each) geared for a speed of nearly 25 m.p.h. The cars were later transferred to Sioux City Rapid Transit Company's elevated railway where they were re-numbered 100-105. After abandonment of the elevated line the cars were used on the lines of the Sioux City Traction Company. Number 100 was later rebuilt to an express motor car.

Oregon: Portland

The book FARES PLEASE by John Labbe covers the history of the city and interurban systems.

The Williamette Bridge Railway Co. completed the Irvington line, using the Sprague system, in August, 1890. Due to the rapid expansion of street railway electrification, delivery of new cars from the overloaded builders was unreliable. Cars for the new line did not arrive until October, 1890. In order to obtain cars for the Fifth Street line then under construction, three single-truck, passenger motor cars were purchased from Northern Car Co. The photograph of car number 26 on page 89 of this book is identified as a Northern-built car, but is instead a Pullman's Palace Car Co.-built car.

The East Side Railway Co. opened an electric line on Hawthorne Ave. to E. 11th St. on January 11, 1891. Extensions of this line opened November 2, 1891, June 5, 1892, and December, 1892. Three Northern Car Co.-built small double-truck interurban passenger motor cars were purchased from the Northwest Thomson-Houston Co., formerly numbers 6-8 of the Fidalgo City & Anacortes Electric Railroad (which see). The successor Portland Railway Light & Power Co. acquired the Salem, Oregon, system in June, 1906. Surplus Portland cars were shipped to Salem to "modernize" the fleet by December, 1907. All three Northern-built cars went to Salem. Photographs of P.R.L.&P.Co. 1040 and Salem 54 are on pages 136 and 152 respectively.

South Dakota: Sioux Falls

The South Dakota Rapid Transit & Railway Co. began operating in June, 1890, with two single-truck closed passenger motor cars and two open passenger trailers. Car number 1, named "Linwood", was equipped with a Manier truck, used on earlier Northern-built cars. (Was this truck designed by W. B. Manier, Northern Car Co.'s superintendent?) This system was abandoned in 1898.

Washington: Anacortes

On March 29, 1891, an 11-mile line was placed in operation between Anacortes and the projected town of Fidalgo City. The Fidalgo City & Anacortes Electric Railroad apparently was built to enable the promoters to obtain a large land grant. Construction of the line was financed by the Northwest Thomson-Houston Company of Minneapolis. Reportedly the Northwest Thomson-Houston Co. had a "large" order of cars specially built for them by Northern Car CO. at a cost of $6,000 each during 1890-1891. The Thomson-Houston Company subcontracted car and truck orders, and truck franchises, to all the major builders. During March, 1891, four of these cars arrived in Anacortes. Numbered 6-9 (2,4,6,8 per another source), they were 34 ft. double-truck, double-end, deck roof, closed passenger motor cars mounted on McGuire #20 "Hubbard" trucks. Exterior colors were dark maroon with gold lettering and striping. Interior finish was antique oak. Cane seats accommodated 28 persons. The first trip over the partially completed line was made by number 8 on March 29th. Sporadic operation followed. A poor generating plant and primitive transmission line, plus lack of passengers, resulted in operations ending completely by December, 1891. Northwest Thomson-Houston Co. repossessed the cars and power plant machinery in April, 1892. The four cars were shipped to Seattle and stored in the North Seattle carhouse fo the Consolidated Street Railway.

Consolidated St. Ry. leased the cars for one week in July, 1892, due to a car shortage.Later in 1892 numbers 6-8 were sold by Northwest Thomson-Houston Co. to the East Side Railway Co., Portland, Oregon. The Consolidated St. Ry. carhouse was destroyed by fire on June 20, 1895. Car number 9 was saved and later went to the Third Street & Suburban Railway, Seattle, (which see).

Washington: Bellingham

The Bellingham Bay Electric Street Railway purchased three single-truck closed passenger motor cars, numbered 1-3, in 1891.

Washington: Seattle

The Third Street & Suburban Railway acquired ex-number 9 of the Fidalgo City & Anacortes Electric Street Railroad, and proceed to make some modifications. The platforms were lengthened and Brill 22-E maximum traction trucks were fitted. The car became Seattle Electric Company number 93 in 1897 and rebuilt in 1902 into chair car number 28 for use in charter service and official company inspections. It was reported sent to Everett, Washington, in 1913 for rush hour service. A company inventory dated November 1, 1915, listed the car as fitted with longitudinal seats for regular service in Seattle. Scrapping occurred shortly thereafter.

The Ranier Avenue Electric Railway built a seven mile line from Seattle to Columbia in 1890. They purchased four single-truck, double-end, closed passenger motor cars, numbered 1-4, in 1890. This company later became part of the Seattle, Renton & Southern Railway. According to their records the cars were 25'0" long, had Thomson-Houston F30 motors, and were equipped with Bemis (cars 1-2) and McGuire (cars 3-4) trucks. Numbers 3-4 had been rebuilt with vestibuled platforms. A company inventory dated February 19, 1913, indicated that only numbers 1, 3 and 4 remained, all as work equipment. Number 1 had been rebuilt in 1912: 21' long, 8' wide, one Brill 21-E truck with two G.E. 67 motors. Number 3 was used as a wrecking car; when scrapped the motors were used in the rebuilding of number 1. Number 4 was a line car: 21'6" long overall, 20'6" long body, 7'6" wide, one Brill 21-E truck with two G.E. 1000 motors.

The West Street & North End Electric Railway opened six miles of line from Seattle to Ballard in November, 1890. Twelve single-truck, double-end, closed passenger motor cars and one single-truck freight motor car were acquired during 1890. The passenger cars were 25'3" long, had McGuire and Tripp trucks with Thomson-Houston F30 motors. Two passenger cars, numbers 180-181, survived as Seattle Electric Company numbers 250-251. Both cars had been scrapped by 1912.

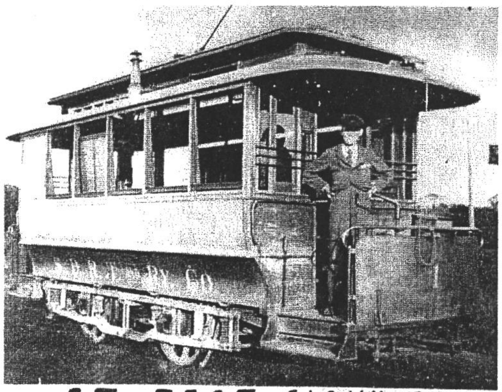
Washington: Tacoma

The Tacoma & Steilacoom Railway acquired some suburban cars with 24 ft. closed bodies in 1891.

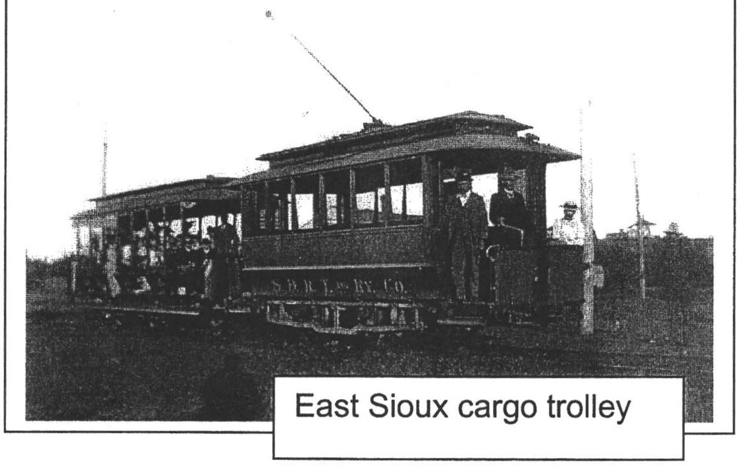
Wisconsin: Milwaukee

Henry Villard's Milwaukee Street Railway decided to make extensive trials before deciding upon and ordering standardized equipment. Two sample cars, one single-truck closed car and one single-truck open car, were ordered from each of twelve carbuilders. Northern Car Co. delivered its two cars in early 1892. MSR subsequently became part of The Milwaukee Electric Railway & Light Co. Of the 12 sample closed cars, nine were left as of 1900, numbered 254-262, the same as on MSR. The Northern-built car was one of them, but after 1905 carried number 61. At that time it had an 18 ft. long body, one Peckham truck with two Edison #8 motors. It was converted to a bunk car for maintenance-of-way use in 1908; the car lasted until 1931 when it was scrapped. Of the 12 sample open cars, four were left as of 1900, numbered 450-453. Number 450 was the Northern-built car. As of 1905 it was 25' 4" long with eight benches, one McGuire truck and one K type controller. The car was scrapped in 1910.

TMER&L Co. also had one double-truck, twelve-bench, open passenger motor car, number 539, built by Northern Car CO. in 1893 according to their records. As the Northern Car Co. plant was destroyed by fire in 1892 this date is incorrect. This car may be Minneapolis Street Railway number 539, from their order of double-truck open cars built by Northern in 1892. During 1893 Thomas Lowry was negotiating a loan for Twin City Rapid Transit Co. from Henry Villard and this car may have been shipped to Milwaukee during 1893 as part of the negotiations. The Milwaukee 1900 roster listed the car as 37' long, 8'2" wide, with Brill maximum traction trucks, used as a trailer. In 1906 the car was re-numbered 1539 and was then in use as a motor car with one K-11 controller and retaining the maximum traction trucks. The car was scrapped in 1910.


AT EAST SIOUX FALLS

East Sioux Inter-Urban


East Sioux cargo trolley

SIOUX FALLS – EAST SIOUX FALLS

MOTOR CARS NO. 1 AND 2

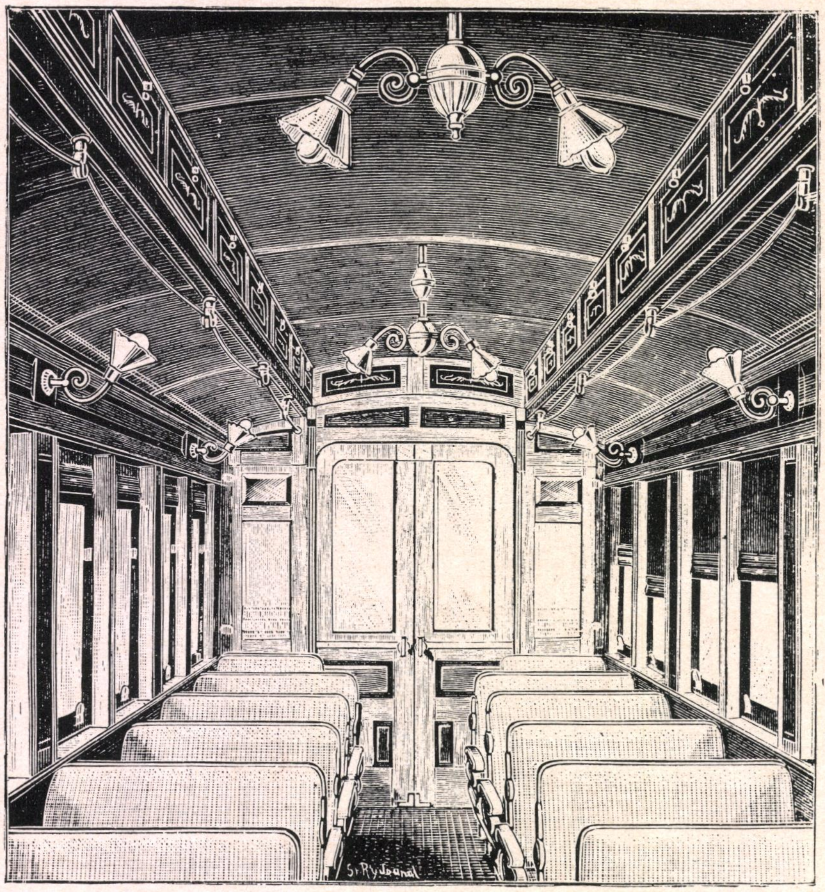
NORTHERN CAR COMPANY,

MINNEAPOLIS, MINN.

BUILDERS OF

STREET RAILWAY

AND SUBURBAN

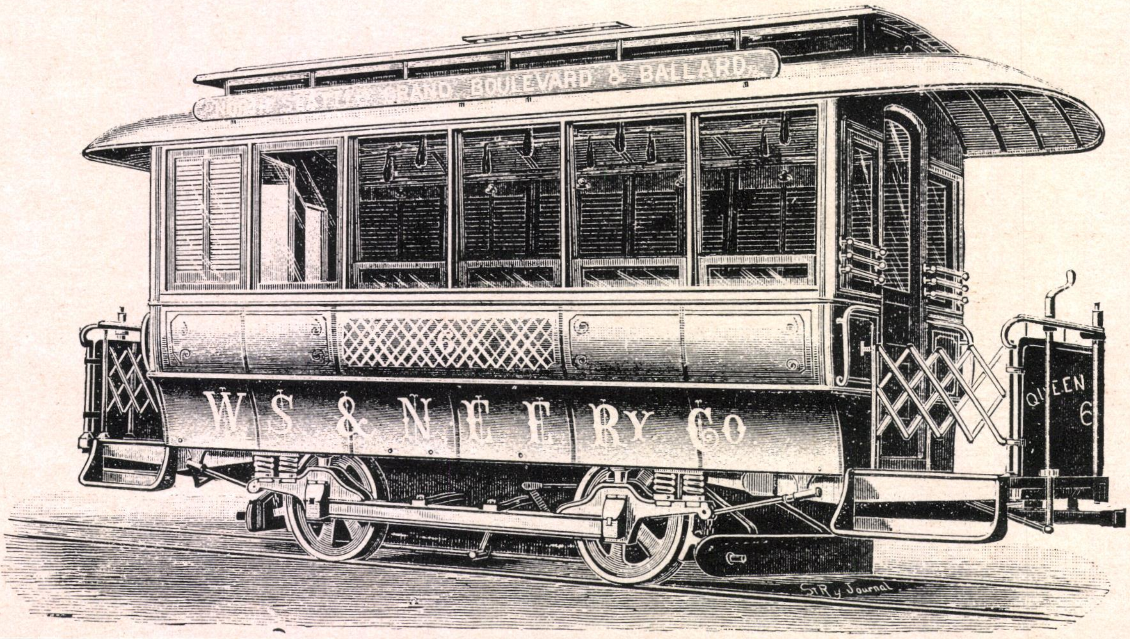

St Ry Journal

Interior of 24 ft. Suburban Car, built for Tacoma & Steilacoom Railway Co.

CARS

Coaches of Every Description.

Electric. ∴ Cable. ∴ Horse.


GRAND BOULEVARD & BALLARD
W S & N E E Ry Co
QUEEN 6
St Ry Journal

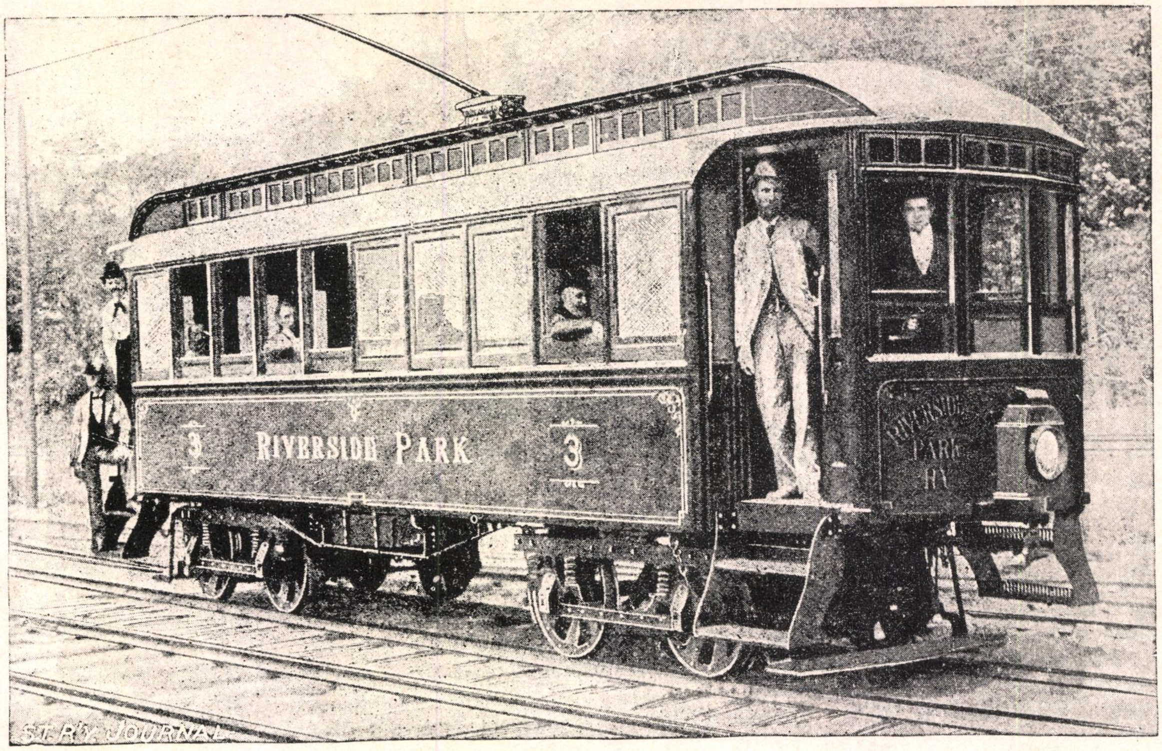
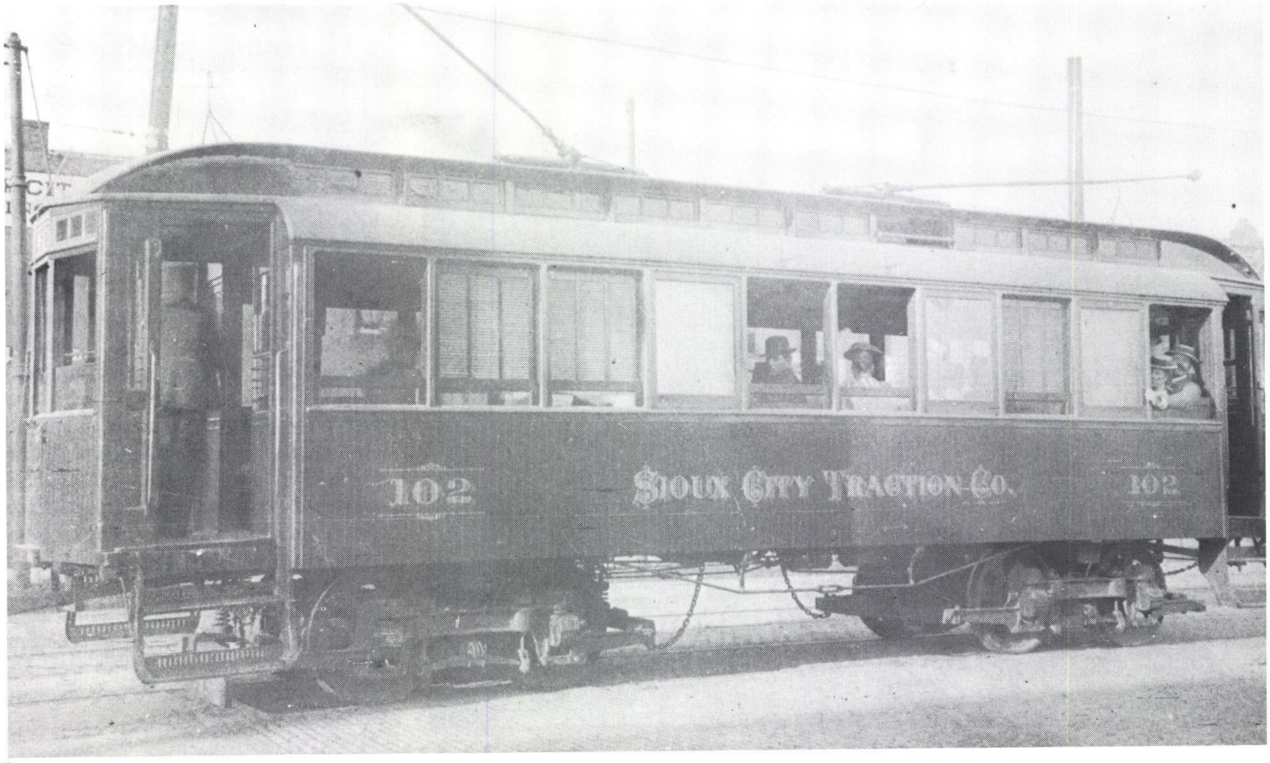
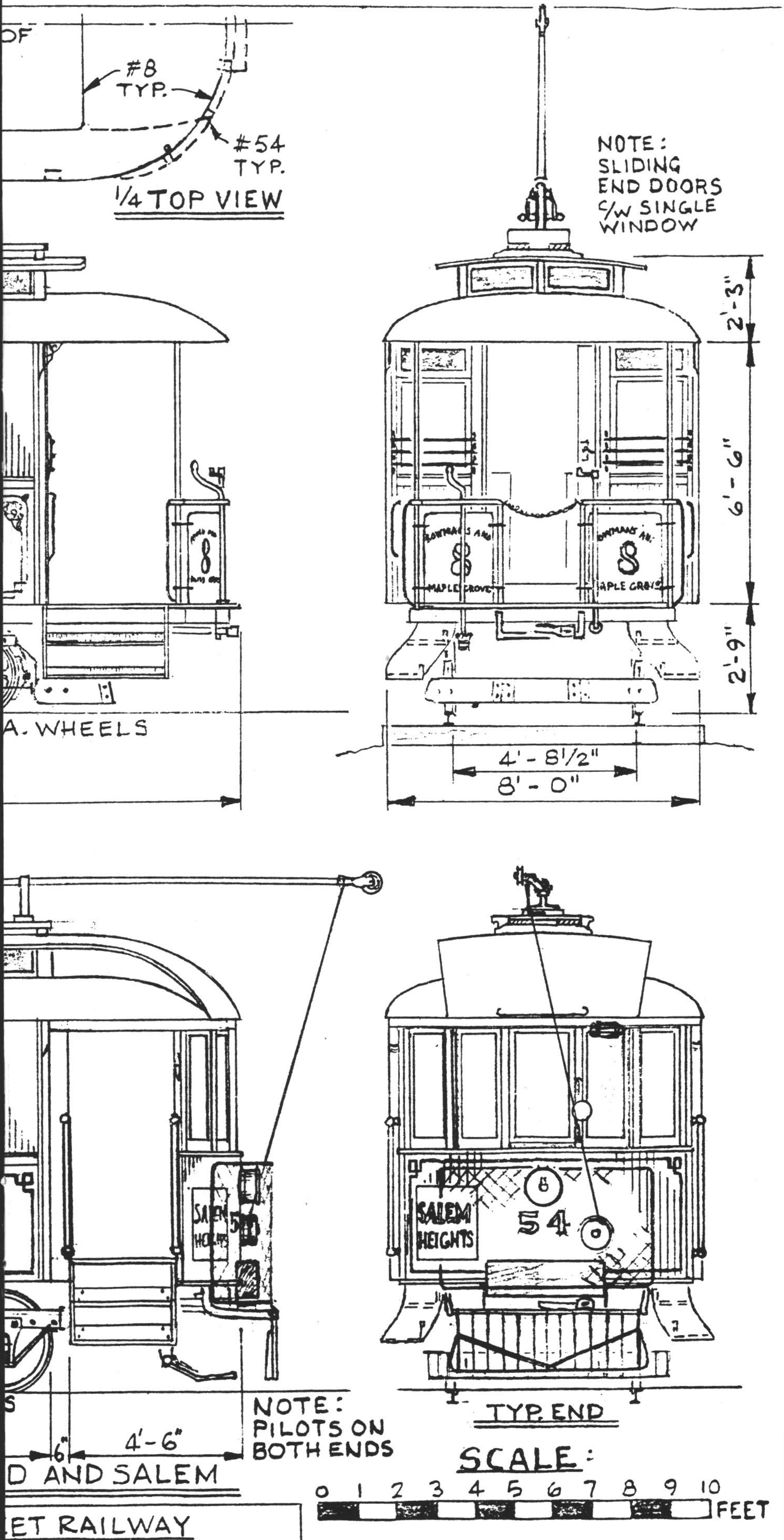

RIVERSIDE PARK
3
3
RIVERSIDE PARK RY
ST. R'Y JOURNAL

FIG. 2.—MOTOR CAR, RIVERSIDE PARK ELECTRIC RAILWAY.


102
SIOUX CITY TRACTION CO.
102



ET RAILWAY
AROLD COX, 1968 (P.49, 62)
C RY. CAR TRUCKS
72, P.81)
TON STATE, (P. 64, P.79)

REF. ALSO: T. THOMSON,
CURATOR-HISTORIAN,
THE ANACORTES RAILWAY
& MARITIME MUSEUM, WA 98221

– IF YOU'RE 1st...

(AND DON'T SUCCEED)

Across the bay and through the forest to the gorge at Deception pass... The 11 mile pioneer interurban line was built south from Anacortes, Washington State.

Long trolley lines were rare in March, 1891. Frank Sprague had perfected the tiny cars of Richmond less than two years previously. Now, there were four large, double truck 'interurbans' to conquer the wilderness.

Homer Benton told this story in the "Electric Traction Quarterly". He notes that Northern Car Co., of Minneapolis, built these quality cars, and they were supplied as part of the electric railway materials for F.C.& A. by Thomson-Houston. Unfortunately, a poor generating plant and primitive transmission line, plus a lack of passengers doomed it. So, by 1892, it was the first interurban to be abandoned.

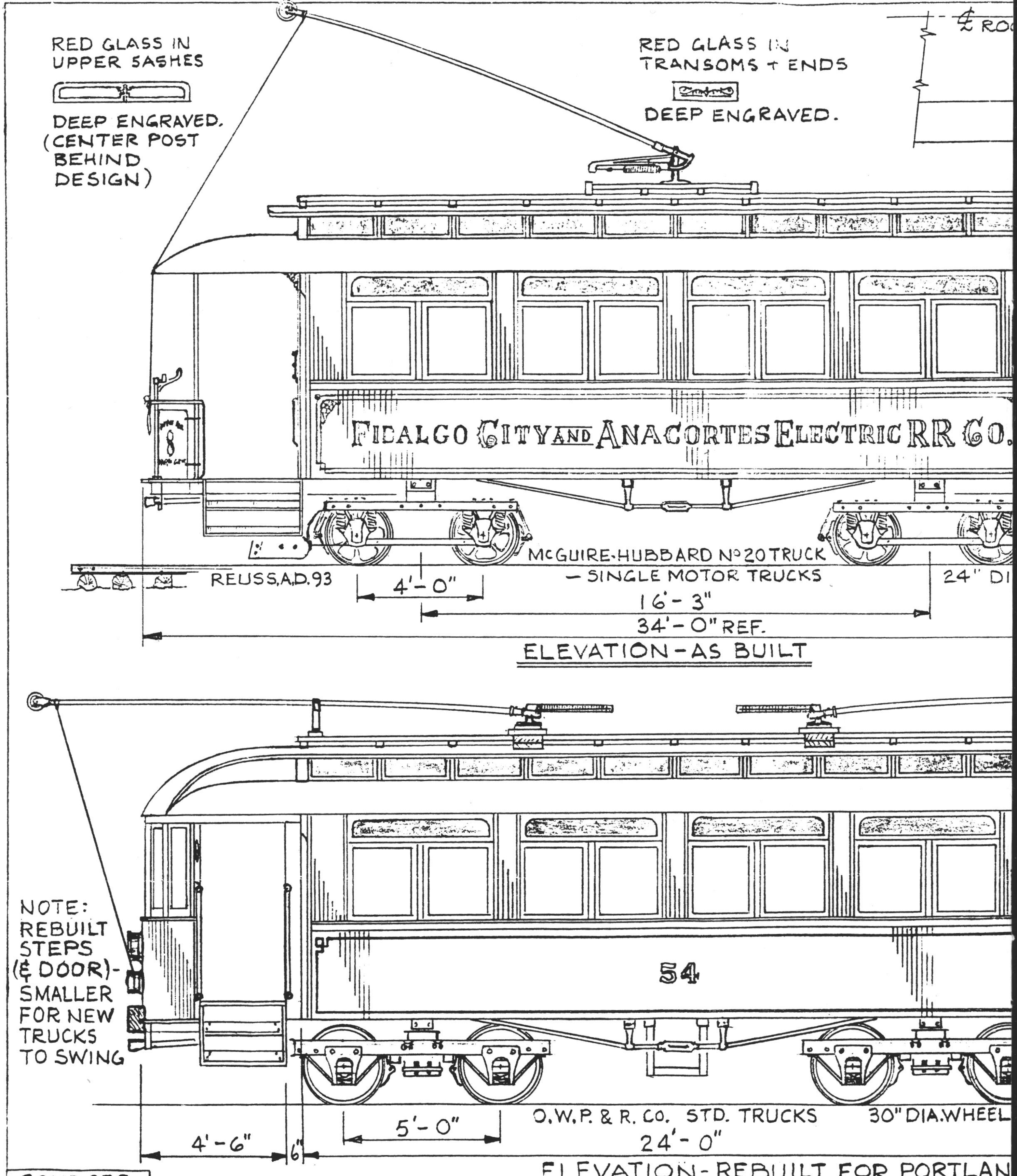
Part 2 of this story began in Seattle as the Thomson-Houston Co. tried to dispose of the repossessed material. One car, placed on 'maximum traction' trucks ran as No.9 of Seattle's Consolidated Street Railway. It was rebuilt as a business car, renumbered 28, and eventually travelled out to Everett. The other 3 cars disappeared and were believed lost in a fire.

John Labbe, author of Fares Please (Those Portland Trolley Years) shows the 3 Northern Car trolleys brought to Portland and Thomson-Houston activity there. He shows new vestibules put on (p.106); New trucks to run on std. ga. suburban lines (p.136); and sent to Salem, Ore., (p.152) They became part of the mighty Southern Pacific R.R. empire in 1912, -an exciting career for these pioneers. Much remains to be discovered. DR

FG AND AERR Co. No. 8

No's (likely) 2, 4, 6 & 8 Built 1891
Capacity: 28 Seated Cane seats
Dark Maroon with gold leaf
Built by Northern Car Company

Dwn: DAVID REUS 1:48 Aug. 14 '93


RED GLASS IN UPPER SASHES
DEEP ENGRAVED. (CENTER POST BEHIND DESIGN)
RED GLASS IN TRANSOMS + ENDS
DEEP ENGRAVED.
℄ ROO
FIDALGO CITY AND ANACORTES ELECTRIC RR CO.
8
REUSS, A.D. 93
McGUIRE-HUBBARD No 20 TRUCK – SINGLE MOTOR TRUCKS
24" DI
4'-0"
16'-3"
34'-0" REF.
NOTE: REBUILT STEPS (& DOOR)- SMALLER FOR NEW TRUCKS TO SWING
54
O.W.P. & R. CO. STD. TRUCKS
30" DIA. WHEEL
4'-6"
6"
5'-0"
24'-0"

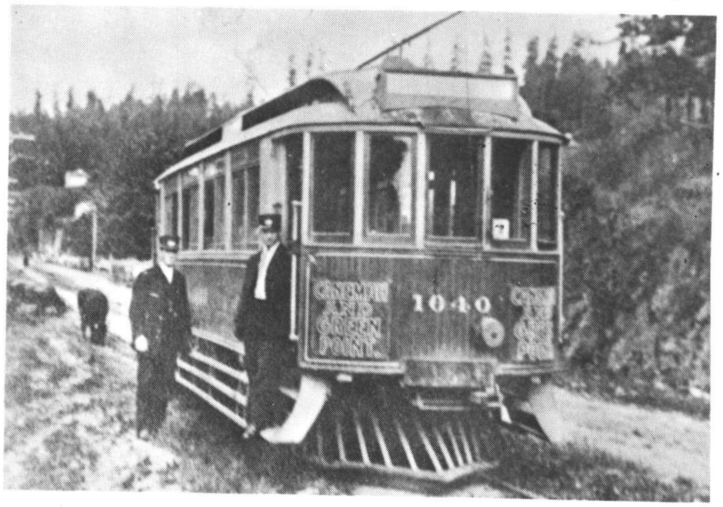
ELEVATION – AS BUILT

ELEVATION – REBUILT FOR PORTLAN

SOURCES:

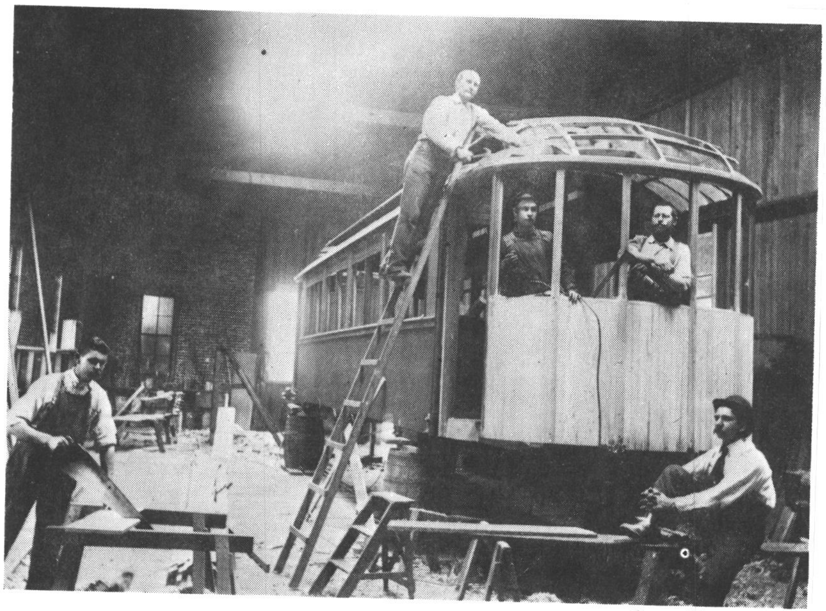
1 RUSSELL L. OLSON, "NORTHERN CAR CO.", ELECTRIC RYS. OF MINNESOTA, HOPKINS, MN TRANSP. MUSEUM
2 HOMER BENTON, "F.C.& A. ELEC. RY", ELECTRIC TRACTION QUARTERLY VOL. 2, NO. 3, 1964
3 JOHN T. LABBE, FARES PLEASE, CAXTON, 1980
4 LESLIE BLANCHARD, THE STRE ERA IN SEATTLE, FORTY FORT, HA
5 E. HARPER CHARLTON, ELECTRI HAROLD COX, ED. & PUBL. 1967 (P.
6 C.E.R.A. 1951 ELEC. R.R.s OF WASHING

POLY-VU AVERY™



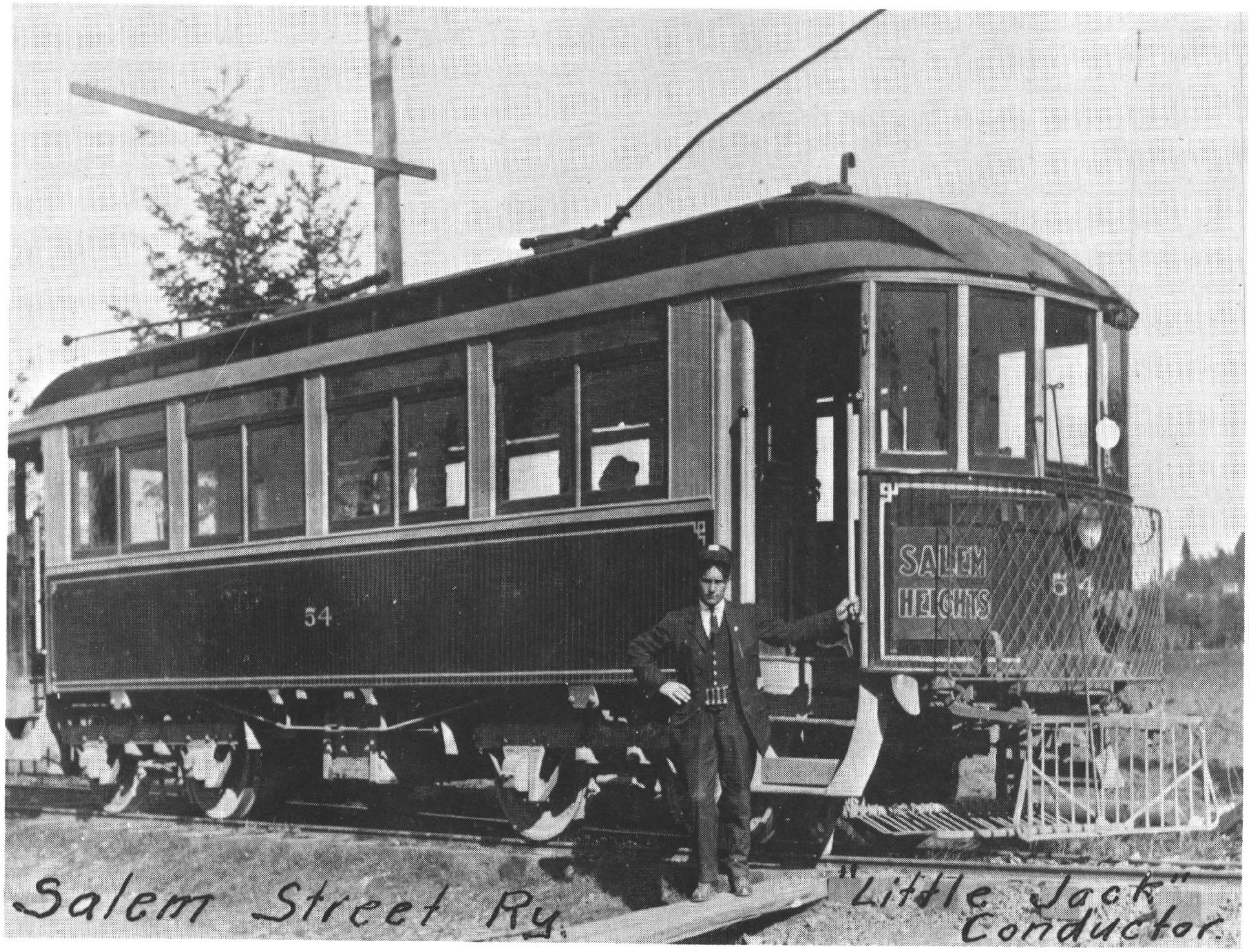
Wm. Hayes

Car 1040 poses in a pastoral setting. One of three small cars purchased from the Northern Car Company for use on the Hawthorne Avenue and Mount Scott lines, it seldom saw service on the rural lines. All three cars were sent to Salem when that system was acquired.



Oregon Historical Society

(1901 ?) A car undergoing reconstruction in the carpenter shop at Milwaukie.



Salem Street Ry. "Little Jack" Conductor.

Oregon Historical Society

The three small interurban cars from the Northern Car Company were also sent to Salem. Originally used on the Hawthorne Avenue and (1892) Mount Scott lines when they were first electrified, they had been replaced by the new Pay As You Enter cars.

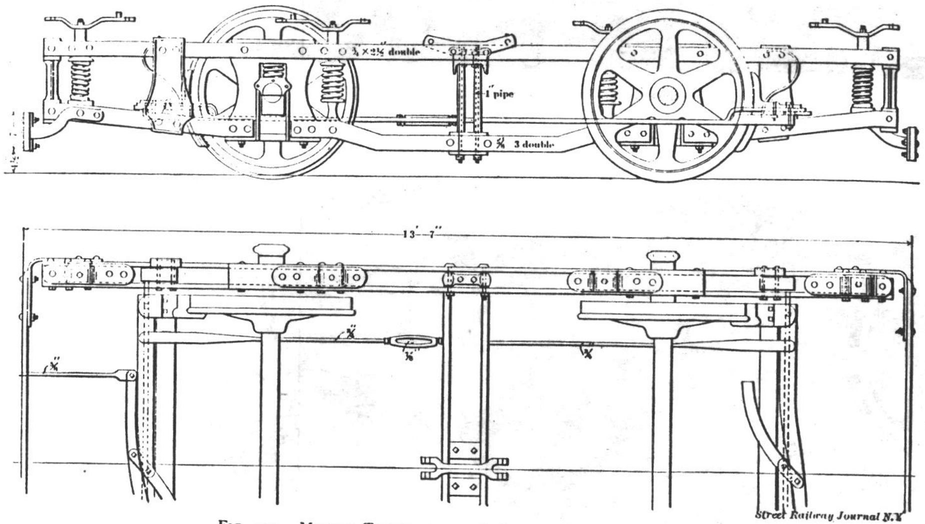

¾×2½ double
1" pipe
⅝ 3 double
13'-7"
Street Railway Journal N.Y.

FIG. 445.—MANIER TRUCK—LEWIS & FOWLER MANUFACTURING CO.

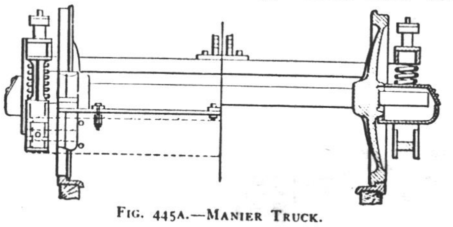
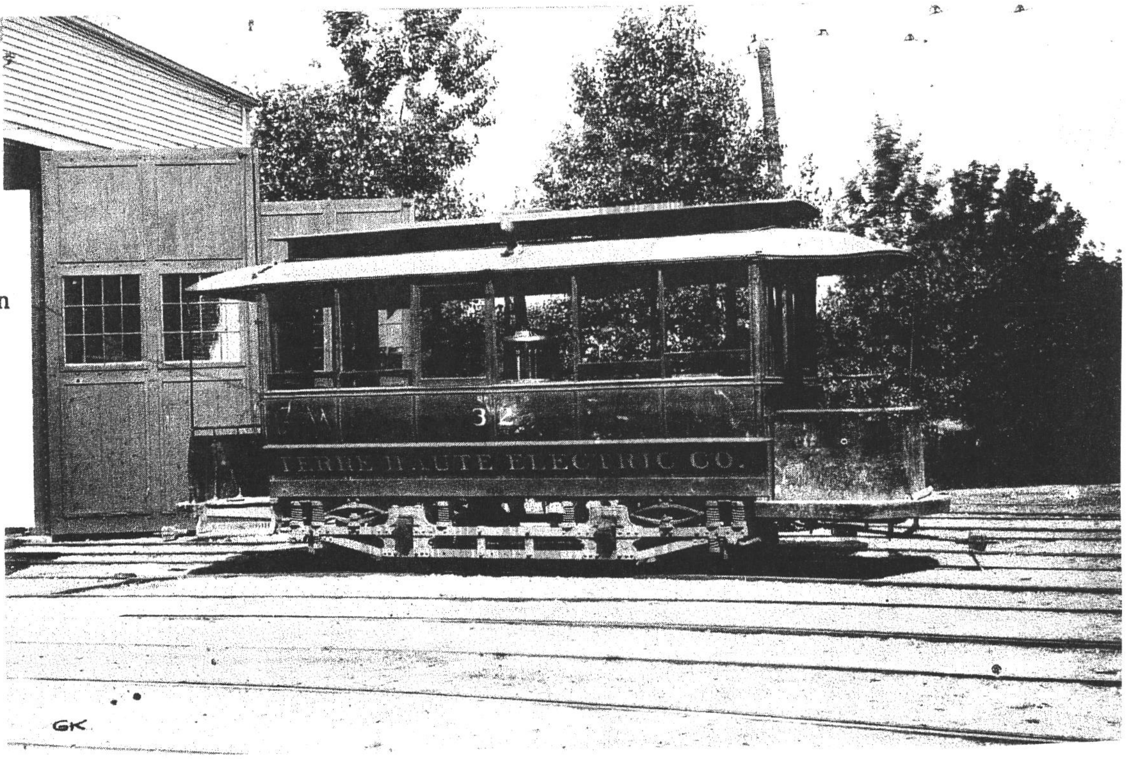


FIG. 445A.—MANIER TRUCK.

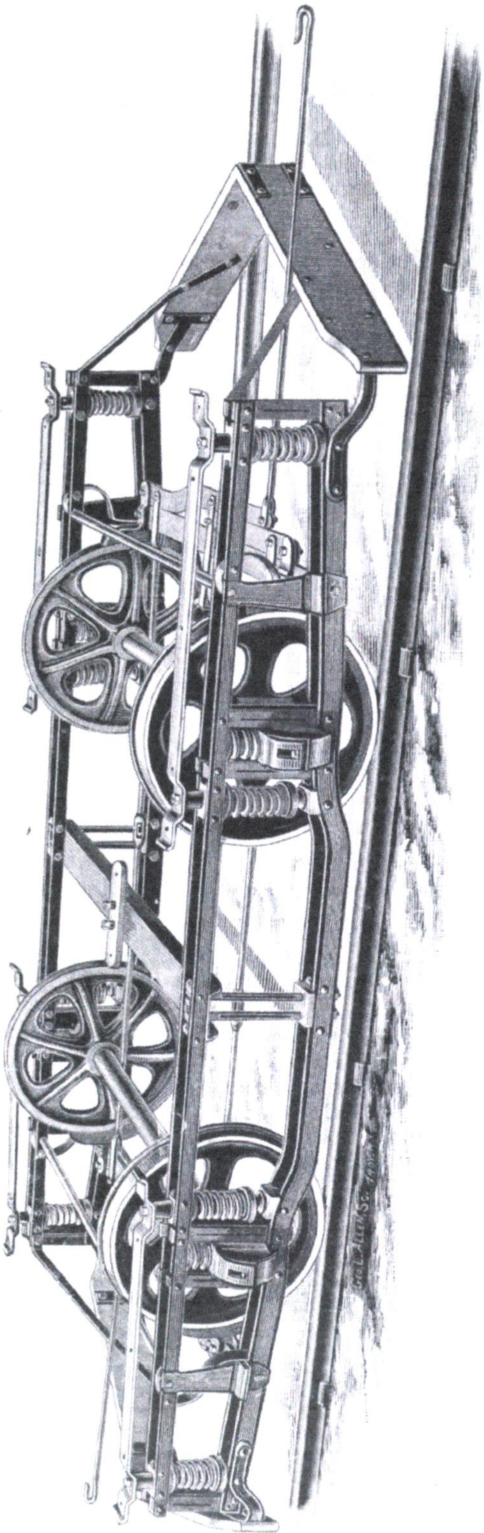
Trailer #32, built by Northern Car Company, was known as the "miner's" car because of its chief assignment at mine shift times.


32
TERRE HAUTE ELECTRIC CO.
GK

1889

Manier's Non-oscillating Street Car Truck.

We illustrate in the accompanying cut a new street car truck, designed and patented by B. T. Manier, superintendent, Gilbert Car Works, Troy, N. Y.



MANIER'S NON-OSCILLATING STREET CAR TRUCK.

Among the main features of this truck are the arrangement of its springs, which provides a double spring action, with one set directly over the axles, taking up all the sudden shocks and jars, while the car body is independently supported by a set of eight springs. The car body and frame are independent of one another, as may be seen in the cut, and the four outer ones of the car body springs are placed so far ahead of the axles that the tipping or longitudinal oscillating motion, which is so general on existing cars, is counteracted. Another advantage of this truck is its adaptability for electric motor and cable road cars, etc. By constructing the frame of double longitudinal wrought iron bars, and depressing the lower ones a few inches in the middle, the usual side braces are done away with, and ample openings are left on either side for taking out the motor armatures and for adjusting the brushes, etc., which may thus be looked after directly from the outside, instead of as present generally through a trap door in the car floor. The truck is finished with a novel and double-acting brake, in which the brake beams slide in horizontal slots, and the two connecting rods are joined in centres with turnbuckles, permitting of such close adjustment of the compound levers that the four wheels can simultaneously be gripped outside by half a turn of the brake wheel, giving a ratio pressure of one to eighty pounds.

The design is neat and light without any sacrifice of strength or durability. The truck can readily be removed from the car body by taking off eight nuts and raising the body an inch and a half. Four of these trucks are in use on the Troy & Lansingburg Electric Railroad, while sixty more have already been ordered by various parties. Those so far in use are said to be giving great satisfaction for the facilities they afford for operating electric motors, and the unusual smoothness and ease with which the cars move

◆

The Troy & Lansingburg Electric Road.

This line, which was constructed under the Sprague system, by Woodbridge & Turner, of New York, was recently put in operation and is reported to be most successful. There are eight cars and about six miles of track. The power is furnished by two Edison dynamos of 80,000 watts capacity, each driven by a 150 H. P. engine through a line of counter shaft. It is so arranged that either engine can drive either dynamo, one machine alone being sufficient to generate power for the whole complement of cars. It is intended, we learn, to extend the line at once through Waterford and Cohoes, and that an order for additional cars has already been given. This gives evidence of the satisfaction with which the new system is regarded, and at an early date it is expected to extend the line through Troy. The trial trip was made with one of the cars, carrying the president of the road, Mr. Cleminshaw; vice president, Gen. Joseph B. Carr; Treasurer Hagen; two of the directors, the superintendent and his assistant, some invited guests, and the electricians, linemen, press representatives and others. Although hardly ready for the test, as all the connections were not completed to the satisfaction of the constructors, the test was entirely successful. It was shown that the car could be promptly stopped and started, and that it was capable of traveling at a rapid rate and of carrying heavy loads.

◆

The Converse Street Car Heater.

The Converse heater, views of which are given in the accompanying illustrations, is a miniature stove with hot air ducts which take the outside air and force it into the car, heating it in transit. The little stove is set in the floor of the car, under the seat, usually on one side as shown in the cuts, mid-way between the front and rear ends of the car, but projecting above the surface of the floor inside several inches. At the line of the floor there are openings in the shell of the heater leading into the crown, into which the cold air on the floor is drawn over heated plates, and discharged into the current of hot air

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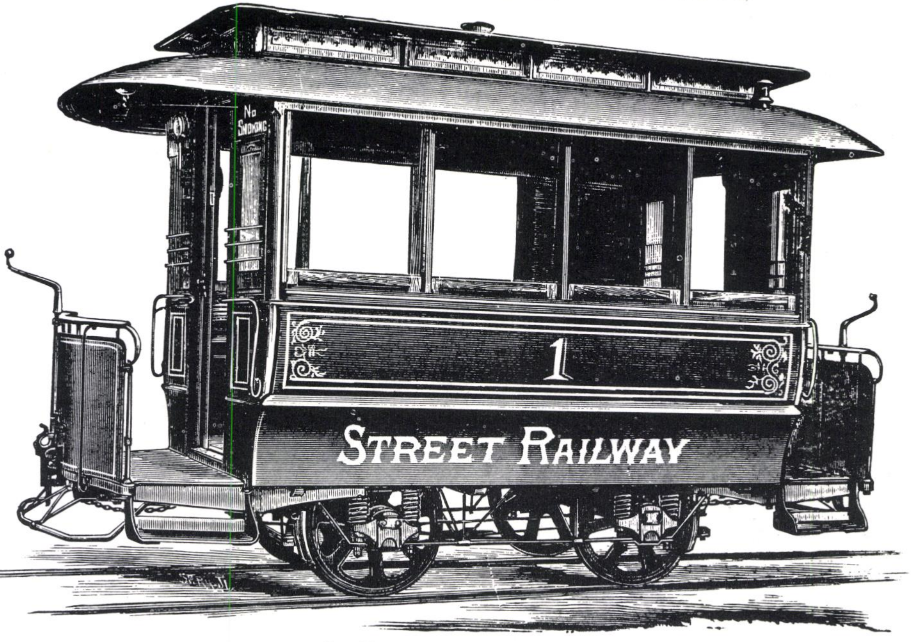
C. P. JONES, Pres. & Treas. A. B. ROBBINS, Vice Pres. GEO. P. STEARNS, Secretary. W. B. MANIER, Supt.

NORTHERN ∴ CAR ∴ COMPANY,

MINNEAPOLIS, MINN.,

Capacity of shop, ten finished cars per week. Estimates and plans furnished on application; prompt delivery will be one of our main features. Orders solicited from all parts of the United States.



Are prepared to furnish cars on short notice and of the very best material, design and workmanship. Will guarantee all work turned out to be entirely satisfactory.

BUILDERS OF

STREET AND SUBURBAN CARS.

Capital Stock, $100,000. $75,000 Cash Paid In.

NORTHERN CAR COMPANY, Minneapolis, Minnesota
formerly the ROBINSON & MOAN CAR COMPANY

data compiled by
HOMER G BENTON
5253 Abbott Ave So
Minneapolis 10, Minn

1889

January (St Rwy J) The Robinson & Moan factory at Waterloo, Iowa is inadequate. Plan to open a new factory in Minneapolis which is to be ready by 1 Nov 1889 with a 45 car per day capacity. To build a two story building 60x300. (hgb-note that daily capacity error)

August (St Rwy J) "THE ROBINSON & MOAN CAR CO., manufactuers of all kinds of electric, cable, motor and horse cars, have recently located in Chicago, with officers at 353 Rookery Building, where Mr Moan will be glad to meet their old friends and other street railway men who may visit Chicago. The company are about opening offices in Sioux City, Ia., and also in St. Paul, Minn."

23 August (Northwestern Railroader) Robinson & Moan was formerly a street car works of Waterloo, Iowa.

September (St Rwy J) "THE ROBINSON & MOAN CAR CO. have shipped a number of open cars for the Key City Electric Railway (Dubuque), and for the new street railway at Yankton, South Dakota; also for Fort Madison, Ia.; Oshkosh, Wis., and to Nebraska. They have an order for electric cars for the Joliet (Ill) Street Railway Co. The company have located their new works at Minneapolis, Minn., their factory at Waterloo, Ia., having been inadequate for some time. Their new one at Minneapolis, which will be finished in the early part of October, will have capacity for three or four cars a day. Their main office will remain at 353 The Rookery, Chicago, with western office at Sioux City, Ia."

4 October (Northwestern Railroader) Robinson & Moan Car works at Parker Station near Minneapolis. To put in a building 360x60 in the spring and plan to begin with a contract for 20 cars by 15 October.

November (St Rwy J) "ROBINSON & MOAN CAR CO., are at present building extensive works at Minneapolis. These works will be very complete, with a capacity of four to five finished cars per day. The main building is 60x300 ft. and two stories high. The second building will be 60x220 ft., also two stories high. They will be ready for work Nov 1, and have already booked some important orders."

1890

January (St Rwy J) -advertisement on p 119 ---
"ROBINSON & MOAN CAR COMPANY W.S. Robinson, President J.M. Moan, Secretary. Manufactuers of all kinds, Electric, Cable, Motor and Horse cars. We use nothing but the best material. Handsomest designs and sell at lowest prices. Office and Factory, Minneapolis, Minn. Chicago Office, 353 The Rookery. Western Office, Sioux City, Iowa."

"The largest exclusive Street Car Works in the United States"

April (St Rwy J) "Robbinsdale, location of Robinson & Moan Car Co is a suburb of Minneapolis that was formerly called Parker Station.

"ROBINSON & MOAN CAR CO., Minneapolis, Minn., among the orders which they have on hand, mention cars for Elgin and Chicago, Ill.; Akron, Canton & Tiffin, O; Oshkosh, Wis.; Centereville and Oskaloosa, Iowa; Chillicothe, Mo.; Minneapolis, Minn."

June (St Rwy J) "THE ROBINSON & MOAN CAR CO., are making extensive additions to their plant. Two hundred men are now employed, and by working nights and day it is impossible to keep up with orders. One hundred and forty cars were in course of construction at the works lately and orders have been received from Akron, Ohio, Grand Rapids, Mich., Oshkosh, Wis., Elgin, Ill., and Memphis, Tenn. A foundry is to be erected and hereafter the company will manufacture its own castings."

"Agents, Tacoma, Wash., J.H. Frasier & Co."

July (St Rwy J) "The building of street railway cars is assuming large proportions in Minneapolis. The Robinson & Moan company employ about 200 men and have about 150 cars in course of construction. Among them may be seen cars bearing the names of Akron, O.; Grand Rapids, Mich.; Oshkosh, Wis.; Elgin, Ill., and other cities of greater or less importance, while work will commence soon on contracts from Memphis and one or two other southern cities. The full capacity of the works has been already reached, and large additions will be made as soon as the buildings can be erected. These cars are being built for roads operated by electricity, by horses and by other kinds of power."

"The failure of the Minneapolis Street Railway Co., to appreciate the importance of this plant, and to give this company an opportunity to bid on the new cars required for the Minneapolis street car system, was a very unfortunate circumstance, and tended ~~xx~~ at first to embarass them not a little in obtaining outside work. The point was made, in soliciting work from other places, that this company ought to be manufacturing for Minneapolis and St. Paul, and that its failure to secure the home contract was an evidence of its inability to do good work. But they have overcome that obstacle." (from correspondent in Mpls via letter)

September (StRwy J) "The Northern Car Co. has succeded to the business of the Robinson & Moan Car Co. of Minneapolis, Minn., the officers of the new company being C.P. Jones, President; J.M. Moan, vice-president and C.E. Mabie secretary and treasurer. The prospects for the new company appear to be very favorable; the gentlemen interested, it is said, possess wide business experience and large capital and they purpose, we understand, to make Minneapolis famous for its cars as well as for other products. The works are so full of orders that the

1890 (cont)

capacity has had to be doubled. Among the places for which they are building cars may be mentioned: Augusta, Ga; Seattle and Tacoma, Wash.; Anaconda and Tower City, Mont.; Portland, Ore.; Duluth, Minn.; Grand Rapids, Mich.; Elgin and Galesburg, Ill.; Milwaukee, Wis.; Akron and Canton, O.; Lincoln, Neb.; Sioux Falls, S.D.; and Minneapolis."

October (St Rwy J) "The Northern Car Company, of Minneapolis, successors of the Robinson & Moan Car Company, report that since the opening of the above works they have had all the business they could handle to advantage. The following are the officers of the new company: C.P. Jones, President; J.M. Moan, vice-president; and C.E. Mabie, secretary and treasurer. The officers and members of the above company are all men of means, and thorough business men. Their works, which are located at Robbinsdale, a suburb of Minneapolis, cover a space of about 50,000 square feet, ~~which~~ which will soon be increased to about 125,000 square feet."

"The above company have recently received orders from the following places: Augusta, Ga . . . (same list as Sept 1890) Besides, negotiations are pending for other large orders in some of the principal cities of the country."

1891

January (St Rwy J) "THE NORTHERN CAR CO., of Minneapolis presented a business appearance at the recent visit of our representative. New buildings are being erected which give much needed additional floor space. Every department is being thoroughly organized for effective work and over 250 men are now employed. They have just finished a fine lot of cars for Tacoma, equipped with Thomson-Houston motors and the well known Tripp trucks. The interiors of these cars were finished in oak, and had the Hale & Kilburn spring seats. Four handsome cars for the West End Street Railway Col, Rockford, Ill., are just turned out. The exterior of these cars is painted a dark green, and the interior is finished in birdseye maple. They have orders also for Seattle, Duluth and Keokuk, Ia."

February (St Rwy J) "The Northern Car Co., of Robbinsdale, Minn., have received large orders for street railway cars from Washington, Tacoma and other cities."

February (St Rwy Review) "The Northern Car Company made a shipment of combination cars to Sioux City this month, and instead of placing them on flat cars they were hauled to their destination over the steam road tracks attached to the end of a freight train. They reached their destination safely, and were greatly admired, as well as the new method of shipment."

7 February (Electircal World) "The Northern Car Company, of this city (Mpls) is turning out some handsome motor cars for the Fidalgo City & Anacores Railway on the Pacific Coast, and for the street railway company of Tacoma, Wash."

1891 (cont)

April (St Rwy Review) Northern Car Co to build 20 new cars for Minneapolis.

May (St Rwy Journal) "Twenty (new cars) will be from the Northern Car co. of Minneapolis . . . ."

"THE NORTHERN CAR CO., of Minneapolis, Minn., are very busy with their many orders for street cars. In a recent letter they mention that they have just made shipment of some sixteen-foot closed cars to Great Falls, Mont., equipped with the Thomson Houston motors, and having a cherry and ash inside finish ; also a number to Helena, Mont., of twenty foot vestibuled cars which were very handsome, full mahogany inside finish and equipped with the Mqnier non oscillating truck and Westinghouse motor; and an additional shipment to Sioux City, Ia. of thrity foot suburban coaches of Manhattan Elevated pattern, with paper wheels, full oak and mahogany trimmed inside finish and plush seats. Their shops are now full of 18 ft 6 in closed cars for the Minneapolis Street Railroad Co. and Duluth Street Railway Co., as well as some smaller orders for summer cars for other roads. This company have also recently supplied the Helena Electric Street Car Co. with two vestibuled cars which are ver handsome. The cars are twenty feet long in the body and have vestibules attached on each end, protecting both driver and conductor as well as the driving mechanism, making the cars twenty eight feet long over all. The interior wood work is out of selected Honduras mahogany and the ceilings out of quartered oak. The car is mounted on Menier trucks, by the use of which all tilting and jolting motions are done away with. The windows are of the ver best French plate glass, handsomely draped with tapestry curtains, which are so arranged that they retrain their positions even when the windows are open. Altogether the cars are palaces on wheels and will be highly appreciated by the public."

"INTERIOR OF A TACOMA CAR"

"A specimen of some recent car construction from the works of the Northern Car Co. of Minneapolis is given in the accompanying illustration showing the interior of a twenty four feet car built by the company for the Tacoma & Steilacoom Rwy Co of Tacoma.

"The car is handsomely finished, both outside and in. The inside is of quartered oak throughout with curtains of tapestry and with the Hale & Kilburn seats covered with rattan. The decorations are modest, and in no way detract from the beauty of the natural wood. The car is equipped with the Hubbard truck and two fifteen Thomson Houston morots."

June (Electrical Northwest) "The Northern Car company is having a very active season so far, and is employing a large number of men at its works at Robbinsdale. It has now in hand and nearly ready for delivery siz of the largest cars ever built for street railway use. These cars were ordered by the Riverside Park Railway company, of Sioux City, Iowa, and are to be used in a summer suburban traffic. The cars are 34 feet in length over all, the car proper being 28 feet with a vestibule, and are equipped with a No. 20 McGuire steel truck and two 20 h.p. Westinghouse motors. The interiors are finished in oak, with Hale & Kilburn seat, presenting a light and attractive appearance. The Northern company also has under way forty closed cars 18 feet 6 inches in length, of a new design, to be used in Minneapolis, and Duluth and three summer cars, also of a new design, for the Elgin, Ill., company. The capacity of the plant is to be nearly doubled at once, which will insure the early completion of the work in hand and a prompt beginning on a large number of new orders that have recently been secured."

Northern Car Co

1891 (cont)

June (St Rwy Review) "The Northern Car Co., of Minneapolis, Minn., have about decided to build an entire new plant which will cover five acres. Their present quarters are entirely too small for the large amount of business now being done."

July (St Rwy Review) Northern Car Co built four cars of 30 foot length for Sioux City Elevated Railway. Each car seats 48 persons.

July (St Rwy Journal) Riverside Park Elec Rwy, Sioux City, Iowa. "The cars, six in number, were built by the Northern Car Co., of Minneapolis, Minn., and are of the vestibule pattern with an inside length of twenty six feet and are mounted on double McGuire trucks with paper wheels."

August (St Rwy Journal) "The Northern Car Co., of Robbinsdale, Minn., send us word that they are very busy at their works and that there are many calls for cars of their manufacture. They have recently sent, upon order, two cars to Minneapolis for the Minneapolis Street Rwy Co. which are very handsome. The cars are eighteen feet in length, finished in the interior with light wood, and have two plate glass mirrors at each end. The body is a bright orange in color while the metal work is black, forming a pleasing contrast with the other finishing and decorative work. The steps are a variation from those found on other cars; they are made of heavy sheets of wire so arranged that the moisture and dirt will readily pass through, insuring a secure foothold at all times."

August (St Rwy Review) "The Northern Car Company" Recently completed for use some 20 new cars of 18 foot length for electric line of the Minneapolis Street Railway. Bodies were bright orange and dark mental work. "They are in every way equal to those turned out by the most successful car companies, and Minneapolis has reason to be proud of an establishment which has shown so mudh skill."

September (St Rwy Journal) "F.S. Wardwell, of Chicago has invented an improved track cleaner similar to the ordinary track broom in construction . . . but the improvements made in it permit the broom to be self adjusting to the track when in use and to be readily and easily placed out of the way. . . . The result is obtained by means of attachments properly secured to the pilot of a car or other suitably situated part of the car truck or body. The Northern Car Co of Minneapolis, Minn. manufacture this track cleaner."

"THE NORTHERN CAR CO., of Minneapolis, Minn., will shortly enlarge their works to double their present capacity. The company have recently shipped three cars to Duluth, which have attracted much attention. These cars are longer than any morot cars now in use in Duluth, being eighteen feet seven inches in the body and twenty six feet seven inches over all, and having seven windows on the side, the present cars having but six. The cars are finished inside handsomely with selected Pennsylvania cherry, with ceilings of quarter sawed white oak, carved and ornamented finely, painted outside, and are of a neat design. The company also recently shipped twenty handsome cars to Minneapolis."

Northern Car Co

__1891__ (cont)

September (Electrical Northwest) "The Minneapolis Street Railway company a few days ago put on the rails twenty new cars from the works of the Northern Car Company, at Robbinsdale. In general appearance they are like those made by the Jones company, Troy, N.Y. and the Laclede Car Company, St. Louis, Mo.

"The length of the new cars is 18 feet and the interior is handsomely finished in light woods. The cars are upholstered in the best manner possible and at each end are two plate glass mirrors.

"The interior of the cars is illuminated by electric lights, and the platforms will be lighted in a similar manner. The car bodies are of a bright orange color, and the decorations and finishing are very artistically wrought.

"A new feature has been introduced on these cars which will be appreciated. The steps are made of wire, so that all dirt and moisture will pass through and no accumulate, as is so common on the ordinary solid step."

November (Electrical Northwest) "The reorganization of the Northern Car Co. brings into the company some of Minneapolis's strongest business men, and abundant capital. The officers of the new corporation are: C.P. Jones, president; W E Steele, vice-president; D.M. Gilmore, treasurer and general manager; Geo P Stearns, secretary. New buildings will be erected at once and the capacity of the present large factory will be doubled. The company has recently filled the following orders. Twenty 18 ft 7 in car bodies for the Minneapolis Street Railway Co.; nine of the same size for the Douglas County Street Railway Col, West Superior, Wis.; three of the same size for the Great Falls Street Railway Col, Great Falls, Mont.; six 26 ft vestibuled double truck electric cars for the Riverside Park Rwy Col, of Sioux City, Iowa; two thirty foot suburban cars for the Washington Park & Spring Grove Railway Co., Sioux City, Iowa; five standard 16 ft car bodies for the Winona Street Railway Co.; Winona, Minn.; one 27 ft double truck car for the North West Thomson Houston Electrci Co., St Paul, Minn."

November (St Rwy Review) Northern Car Co just delievered two 30' suburban coaches to E. Hookinson of Sioux City.

6 November (Railroad Gazettee) "The Northern Car Company of Minneapolis, Minn., has be incorporated for the purpose of manufacturing street cars, railroad cars, locomotives, electric motors, engines, etc,. The incorporators are: C.P. Jones, D.M. Gilmore, W.E. Steele, S.S. Thorpe, all of Minneapolis. This company is already engaged in the manufacture of street cars and under the new arrangement will increase its business by extending it into branches not already embraced."

21 November (Electrical World) The Northern Car Co with a capital stock of $250,000 incorporated in Minneapolis, Minn.

---(History of Minneapolis by Isaac Atwater, 1893) Northern Car Co reorganized 31 October 1891 in Minnesota. Members of board are: C P Jones, D M Gilmore, S S Thorpe, A B Robbins, J M Bartlett, N. F Griswold, J D Blake, F W Forman, W E Steele, G P Stearns.

Northern Car Co

1892

January (Street Railway & Electrical News) "The Northern Car Co. are shipping an order for street cars to Milwaukee, Wis., and are also furnishing this city's company with another large order. They are also rebuilding some 66 of the old cars to same length (22 feet) as the one which is now running on the Bloomington avenue line."

January (St Rwy Journal) "A REORGANIZED CAR COMPANY" "The Northern Car Co of Minneapolis have recently been reorganized, and their capital stock increased to $250,000 in order to accomodate the many orders of which the company are constantly in receipt. The new officers of the company are: President, C P Jones; vice president, W E Steel; treasurer and general manager, D M Gilmore, who was with the Gilmore Furniture Co of Minneapolis for seventeen years and secretary, George P Stearns. The superintendent is C B Manier, who was for three years with the Gilbert Car Company of Troy, N Y as workman, general foreman and superintendent.

"At the location of the factory at Robbinsdale there are at present three buildings, each 60 x 150 ft., to which will be added immediately a paint shop of 75 x 100 ft. On the pay rolls of the works are 200 names, the capacity of the works at present is one car per day.

"The impetus given to the car manufacturing trade by the wide adoption of electric power throughout the country has been felt greatly by the Northern Car Co., and the manufacture of electric cars constitutes a most important part of their business. They have built a large number of the recent electric cars installed on the Minneapolis Street railway and number many other prominent street railway companies in the West and Northwest, especially, among their customers."

"Minneapolis, Minn - The company have pladed an order with the Northern Car Co for sixteen new eighteen foot electric cars for local use, the same size as those now running. They will be numbered from 523 to 539, painted yellow and finished in cherry."

February (St Rwy Journal) "Helena, Mont. . . . the cars by the Northern Car Co of Minneapolis." Helena Rapid Transit Co

"Minneapolis, Minn - The first 'made over' motor car to be turned out of the Northern Car Co's shops has been put in service here. The body is twenty two feet long, and the length over all thirty feet. It is the result of joining two sixteen foot Stephenson horse cars from St Paul. Others of the same pattern will be completed as fast as the company can turn them out, and they will be the most commodious ones upon the line."

February (Street Railway and Electrical News) "A large and handsome vestibuled motor car, mounted on double trucks and propelled by two 25 h.p. motors, will soon be tested on the interurban line, and if it does the work claimed for it, this style of car will be used exclusively. The car is 35 ft in length, and in general style is like a railroad car. It will seat forty persons, and will carry as many more without overcrowding. It was built by the Northern Car Co. for N.W. T-H Co., whose idea it was to use the double trucks and large motors, in order to meet the requirements of the interurban traffic.

"At the annual meeting of the Northern Car Co., held last week, the

Northern Car Co

1892 (cont)

following officers were elected: A B Robbins, pres dent; W E Steele, vice president and treasurer; D M Gilmore, general manager; C P Stearns, secretary: D M Gilmore, C P Jones, W E Steele, A B Robbins, C P Lowell, E S Croser, J M Bartlett and T B Walker, directors. The company is running its works at full capacity, and is receiving orders from all parts of the country. This company is building the handsomest cars made in America, and is constantly making improvements that street railway managers and patrons appreciate."

February (St Rwy Review) Northern Car Company had its annual meeting on 9 February. Prosperity was the word. Shops are to be rebuilt, remodeled and enlarged. This month the shops shipped cars for the new Winona, (Minn) street railway company.

March (St Rwy Journal) "The Northern Car Co., of Minneapolis, are building the finest electric car ever turned out of thier shops. It is being built for the Thomson Houston Company and will probably go to Sioux City. It measures about 35 feet over all, has ten windows on each side, and is mounted on double trucks, with thirty inch wheels. The body is paneled like a railroad coach and the finishings are neat and handsome. The interior is finished in polished light woods, and at night time will be brightened by eight large electric globes."

March (St Rwy & Elec News) " NEW SUMMER CARS AND MOTORS"
"The new summer, or open cars, now being built at the Northern Car shops, for the Minneapolis and St Paul lines, will be large and handsome. They will be in general style about the same as the best open cars used here last summer, with reversible seats, only much higher and longer. Each car is thirty six feet over all, and is mounted on two Bemis Patent trucks; twenty four feet from center to center; and most of the trucks have 33 in wheels. Each truck will be equipped with a 25 h.p. Short gearless motor. These motors are the first of this type to be used here and have been selected after most thorough investigation, and because they seem to be an ideal motor, running noiselessly and without waste of energy, and without danger of frequent break downs and consequent large repair bills. It is this last item that causes more expense and trouble than all other bombined defects in motors. The gearless is also economical in consumption of current, while its speed is one of its best qualities, and this is especially noticeable on grades."

"It is a matter of just pride to any manufacturer to receive from customers unsolicited words of praise of the products of his factory . . . As citizens we are glad to see in Minneapolis such an enterprise as the Northern Car Co. which, since its reorganization and the election of D M Gilmore as superintendent and general manager, has been turning out a line of street cars that are rapidly making their way into many western cities and soley upon their merits. The company has recently received unsolicited highly complimentary letters from General Managers Goodrich of Minneapolis, Wardwell of Duluth, Pres Norvell of Superior, the superintendents of street railways at Milwaukee, Spokane Falls and several other cities all of whom thus speak of the Northern Cars after they have been used side by side with those of other leading manufactures.

1892 (cont)

The company now has over $80,000 worth of work under way in its shops, and it is about ready to ship cars to Rockford, Ill. and Clinton, Iowa."

April (St Rwy & Electrical News) "C.P. Jones, formerly president of the Northern Car company, has gone to his farm near Moorhead, where he hopes to recuperate, having been obliged to give up active work in the city on account of his health."

29 April (Railroad Gazettee) "The Northern Car Co just built for the Minneapolis Street Railway a vestibule street car for the line between Minneapolis and St Paul. The company is building 70 cars for the Milwaukee Street railroads."

May (St Rwy Review) Northern Car Co burnt on 7 May. Many orders for cars were lost in the fire. Cars were being built for St Paul, Rockford, Ill; and Minneapolis. Plans call for rebuilding plant. Plant consisted of Main plant of two storeis, frema, L shape; Mill room; construction room; blacksmith shop; engine room; dry house; sheds; tan house and office building

12 May (RR Gazettee) "Northern Car Co burned down on 6 May in AM. This concern made street cars chiefly."

May (St Rwy & Elec News) "THE NORTHERN CAR COMPANY'S FIRE"
"The recent fire in the Northern Car company's works may turn out to be a blessing in disquise, for the company has decided to rebuild at once using only brick and stone, and to lay the foundation of a plant that may be second to none in the country. The company is under too enterprising management to let anything of this kind interfere materially with their work, and they now announce that all new orders will be filled just as promptly as if no fire had accurred, for by the time the plans and specifications of the new work can be prepared, the factory will be ready to receive it. The beauty, superior workmanship and materials of the company's cars have attracted so wide attention, their orders are coming from all parts of the country, and they are able to compete with any factory in America doing as high grade work."

"THE NEW CAR"
"This new double truck vestibule street car has lately been built by the Northern Car Co., of Minneapolis, for the Northwest Thomson-Houston Electric Co. It is rather a new style of street car from any heretofore seen on the streets of the Twin Cities.

"The Northwest Thomson-Houston Co., of this city, conceived the idea that a longer car than those used at present by the interurban line between this city and Minneapolis would be more practical, and one much better adapted for long lines similar to the interurban line; and a few evenings ago through the courtesies of the officials of the Minneapolis & St Paul Street Railway Cos., ran the car shown in our cut, which they had built after their own ideas, over the interurban line, making a practical demonstration that this plan was turly a practical one in every detail.

"This car is 35 feet long, equipped with two maximum traction trucks (20 feet apart), two Thomson-Houston water proof , 25 h.p. motors. The

Northern Car Co

1892 (cont)

speed attained was 24 miles an hour, with an average of 18 miles.

"The Northwest Thomson-Houston Electric Co. feels very much elated over the success of this trial trip, and have thus proved that, for long lines where few stops are made, a double truck car is the only one to be successfully operated."

"The Douglas country street railway company, West Superior, are about to add ten new cars from the Northern Car Co., of Minneapolis."

June (St Rwy & Elec News) "The Northern Car Company has shipped 11 34 foot open motor cars from its fadtory for the Minneapolis St Rwy. The cars are models of beauty and comfort, have reversible cross seats with an aisle down the center as in a railroad coash. They are mounted on two trucks, each truck being equipped with a 25 horse power WP T H motor. Two of these new cars are now running on the interurban line and will carry about 100 people."

"The Northern Car Company shipped this week, equipped and ready to be transferred to the street car tracks, the first of the new car bodies ordered for the Duluth Street Railway Company. This car is a facsimilie of the two new ones run on the Interurban line at Minneapolis, equipped with two 20 HP Short Gearless Motors, and will be placed on the line at the head of the incline and back of the city of Duluth."

June (St Rwy Journal) "The Northern Car Co of Minneapolis lost a good part of their plant by fire on the morning of May 7. Many finished and partly finished cars were also destroyed by the flames, including a number of cars for St Paul and Rockford, Ill. The loss was fully covered by insurance. Not discouraged by their disaster the company determined to immediately rebuild and expect soon to be in shape for business again!"

June (St Rwy Review) Northern Car Co to ship its first of new car bodies to the Duluth St Rwy Co

4 June (Electrical World) The Northern Car Co just finished first of new car bodies for Duluth St Rwy Co. To be used at head of incline

J July (St Rwy Review) Northern Car Co to rebuild at City. Mr Lowry (of Mpls Rwys) offers 10 acres of land and to take $20,000 stock in Co by himself and friends. Loss of fires was $86,000. They got $20,000 in salvage and $60,000 in insurance

July (St Rwy & Elec News) "The Northern Car Co will build their new plant near the SOO Railway shops north of Sandy Lake, in northeast Minneapolis Work upon the same will begin very soon. This will make the shops the same distance from the center of the city as Lake Calhoun."

Northern Car Co

1893

February (St Rwy Journal) "Northern Car Co of Minneapolis, Minn., has been reorganized and, early in the spring, will begin the erection of an extensive plant for the building of street cars. The land has already been secured, and the company has sufficient capital to put up works, the immediate capacity of which will be 15 cars per week. Mr Manier, who is now superintending the car dept of the Minneapolis Street Railway Co, will be the manager of the Northern Car Co's new shops. A number of prominent Minneapolis capitalist are interested."

Minneapolis Park Board History

Sandy Lake was a shallow water area of 40 acres, later renamed Lake Menomin. In 1944 it was the site of the present large meadow, part of Columbia Park. The park property had been purchased in 1892.

Mpls Real Estate Transaction
12-12-1891
Frank W. Forman to Northern Car Co. Flour City addition $3,200.00
Lots 12 etc., Block 2 etc.,

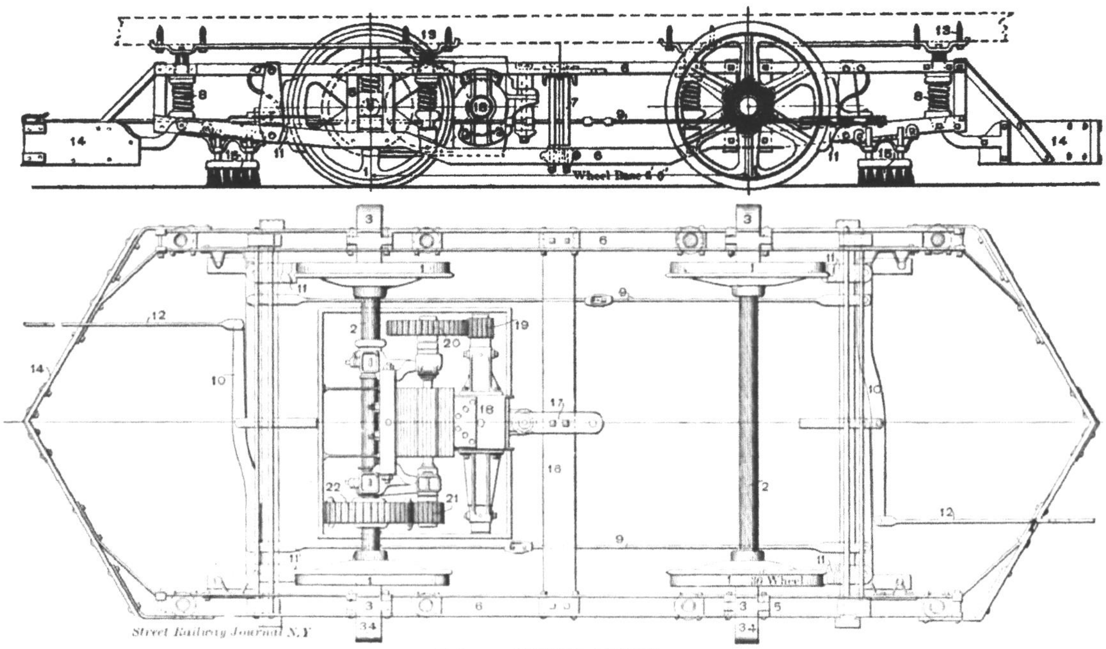


FIG. 2.—MANIER TRUCK.

Northern Car Co

Available records indicate that the following received the company's product:

	Georgia	
	Augusta	August Railway Co
	ILLINOIS	
	Chicago	
	Chillicothe	Peoples Street Railroad Co
	Elgin	Elgin City Railway Co
	Galesburg	College City Street Railway Co
	Joliet	Joliet Street Railway
	Rockford	West End Street Railway
	IOWA	
	Centerville	Peoples Street Railway Co
	Des Moines	Des Moines Electric Railway
	Dubuque	Key City Electric Street Railway
	Fort Madison	Fort Madison Street Railway Co
	Keokuk	Keokuk Electrid Street Railway & Power Co
	Oskaloosa	Oskaloosa Railway & Land Co
	Sioux City	Sioux City Elevated
		Riverside Park Railway Co
	MICHIGAN	
	Grand Rapids	
	MINNESOTA	
	Duluth	Duluth Street Railway Co
SECOND HAND	× ~~Mankato~~	Mankato Electric Co (got ex Twin City RT #526
	Minneapolis	Minneapolis Street Railway Co
SECOND HAND	× ~~St Cloud~~	
	St Paul	St Paul Street Railway Co
		Northwest Thomson-Houston Company
	Winona	Winona Street Railway
	~~MISSOURI~~ IOWA	
	Clinton	Clinton Street Rwy Co
	MONTANA	
	Anaconda	Anaconda Railway Light & Power Co
	Great Falls	Great Falls Street Railway
	Helena	Helena Electric Street Car Co
	Tower City	
	NEBRASKA	
	Lincoln	
	OHIO	
	Akron	Akron Street Railway &
	Canton	Canton Street Railway Co
	Tiffin	Tiffin Street Railway Co

Northern Car Co

OREGON

Portland	Waverly & Woodstock

SOUTH DAKOTA

Sioux Falls	Washington Park & Spring Grove Railway
Yankton	Yankton Street Railway Co

TENNESSEE

Memphis	

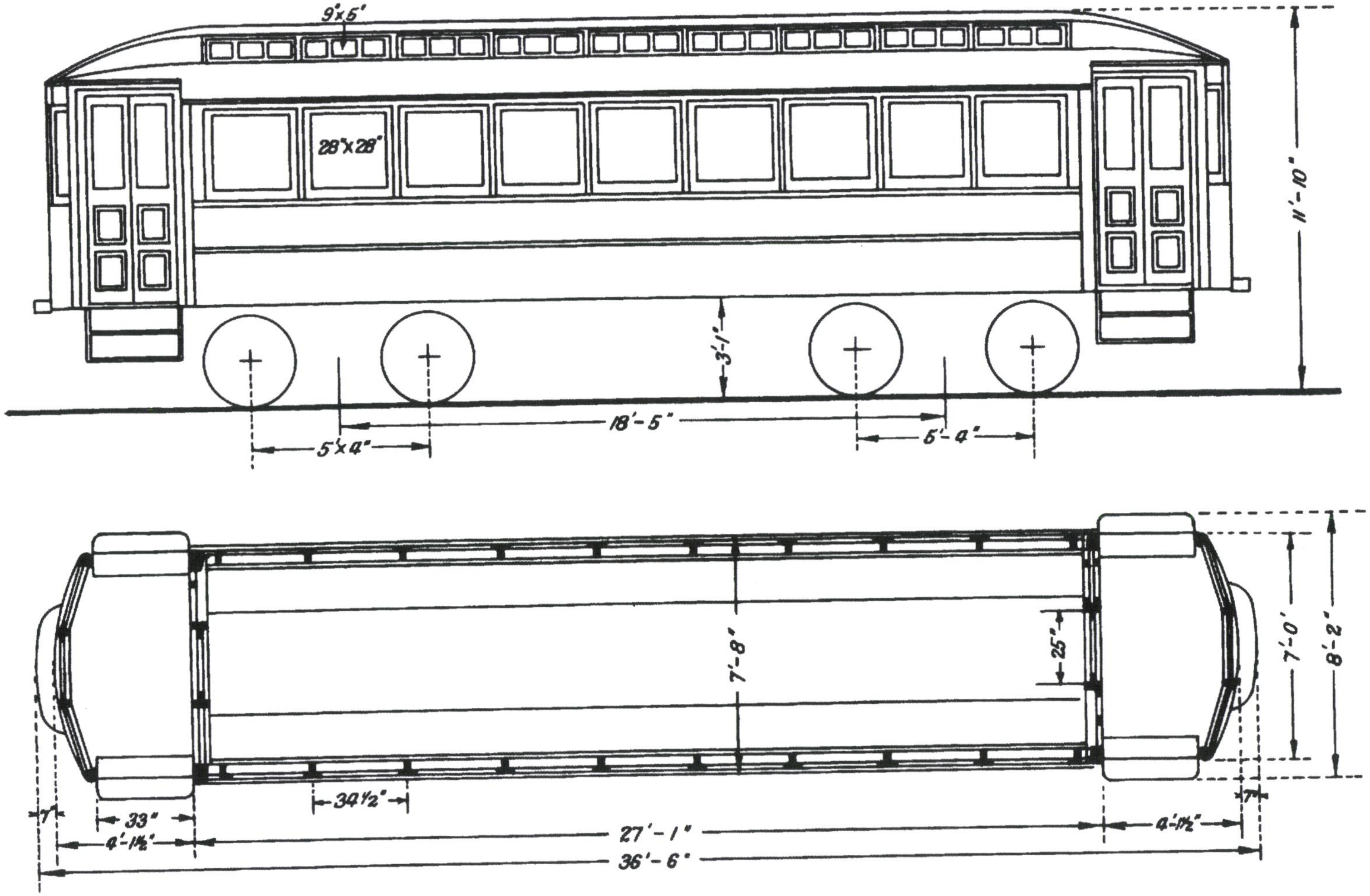
WASHINGTON

Anacortes	Fidalgo City & Anacordes
Seattle	West Street & North End Electric Railway Rainier Avenue Electric Railway
Spokane Falls	
Tacoma	Tacoma & Steilacoom Railway

WISCONSIN

Milwaukee	Milwaukee Electric Railway Co
Oshkosh	Oshkosh Street Railway Co
West Superior	Douglas County Street Railway Co

CANEMAH AND GREEN POINT.
1040
CANEMAH AND GREEN POINT


9"x5"
28"x28"
11'-10"
3'-1"
18'-5"
5'x4"
5'-4"
7'-8"
25"
7'-0"
8'-2"
7"
33"
4'-1½"
34½"
27'-1"
4'-1½"
7"
36'-6"

EQUIPMENT:

NUMBER OF CARS 20
SEATING CAPACITY 36 PASSENGERS
WEIGHT . . . . 29000 LBS
BEMIS TRUCK
2-401 STANLEY MOTORS - 14 CARS
2-402 STANLEY MOTORS - 6 CARS
K-11 . . . . . CONTROLLER
NAT'L BRAKE - A-4-16 COMPRESSOR
C.U.T. CO. . . . TROLLEY BASE
C.U.T. CO. . . . FENDERS
RATTAN LONGITUDINAL SEATS
ELECTRIC HEATERS
BUILT BY GILBERT CAR CO.

Northern-built cars were nearly identical. 10 windows instead of 9 windows

Revised Feb'y 1st 1911

CHICAGO RAILWAYS COMPANY
ROLLING STOCK
3819 - 3838 INCL.
BUFFALO CLOSED MOTOR CAR
ENGINEERING DEP'T
2220-9

Digitized by Google

ERJ
2-14-1925

Official Tells of Twin City Activity in Car Building

Details of the arrangement under which the Twin City Rapid Transit Company is building cars for other cities were recently made public in a statement issued by Horace Lowry, president of the company.

Mr. Lowry explained that the Twin City lines have very large modern shop facilities which have not been fully utilized in recent years on account of conditions brought about by the war. When the Light-Weight Noiseless Street Car Company received an order to build 50 cars for the Chicago Surface Lines an arrangement was made with the Transit Supply Company, a subsidiary of the Twin City Rapid Transit Company, to have this work done in the Twin City shops, on a cost plus basis.

It was pointed out by Mr. Lowry that the stockholders of the Twin City Rapid Transit Company are protected against loss from this car-building activity and at the same time the Twin City shops are being kept busy. He said that the Transit Supply Company is protected in its arrangement with the Light-Weight Noiseless Street Car Company. Whether or not the car company makes a profit is of no interest to the Transit Supply Company, as the latter is protected and assured a profit by the nature of its contract.

This arrangement was considered highly desirable and profitable by Mr. Lowry. He claimed that the shops and personnel of the Transit Supply Company are inferior to none, and said that the company plans to continue building cars under this arrangement as long as this can be done without interfering with regular street car service in the twin cities. Any profits made from this construction work will go to the operating companies and will thereby be used to reduce the cost of car service.

LIGHT WEIGHT NOISELESS ELECTRIC STREET CAR COMPANY

St.PAUL, MINNESOTA

The firm of A. L. Drum & Company, Consulting and Constructing Engineers, Chicago, Illinois, had been engaged by Twin City Rapid Transit Company from 1911 onward to conduct valuation and fare rate studies required by city ordinances and state laws. The consultants became interested in TCRT's experiments in building lightweight streetcars under the guidance and inspiration of its Master Mechanic, Walter J. Smith. The completion of lightweight, multiple-unit, two-car train 2002-2003 in November 1921 came at the time when the consulting firm was engaged in valuation studies necessitated by passage of the Brooks-Coleman Law by the Minnesota Legislature. Mr. Drum became convinced that a ready market could be found for such cars through-out the country. However the majority of TCRT management was wary about over-investment in this radical car. So several of its most avid backers incorporated the Light Weight Noiseless Electric Street Car Company with offices located at the Drum & Company's headquarters in Chicago. The officers were: A. L. Drum, Chicago, President; E. M. Maddox, Chicago, Vice President; R. C. Choate, Minneapolis, Vice President; and A. J. Chaleen, Minneapolis, Master Mechanic. Mr. Chaleen was previously employed by TCRT. A contract was entered into with TCRT's wholly-owned subsidiary, Transit Supply Company, to build the cars in its Snelling Shops, St.Paul, invoicing LWNESCCo. for the actual cost plus 10% profit.

Their earliest advertisments stated they would build cars to designs furnished by the customer, or they would supply two types of cars of their own design, designated as Car A and Car B.

Car A: designed to one or two-man as single units, or three-man operation as a two-car train. This car was identical to TCRT 2002-2003.

Car B: designed for one or two-man operation as a single unit. 37'6" overall length, weight 22,000 to 24,000 pounds, seating 43, providing 10% faster schedule speed with 40% power savings. The first drawing was dated 2-28-1923 and revised 6-12-1924.

The lightweight truck used in both designs was advertised as the W. J. Smith #12 truck although it was identical to the Twin City #12 truck which was designed by Mr. Smith.

The first contract was received in 1924 and consisted of an order for 50 carbodies to be built to the design and specifications of the Chicago Surface Lines. Twenty cars were for the Chicago City Railway (6219-6238) and thirty cars were for the Chicago Railways Company (3232-3261). Both groups were identical in appearance, designed for operation by one-man, two-man, or two-car train units. Other details were: 48'11" long, 8'4" wide, weight 41,700 pounds, two 60 h.p. motors, and Brill 39-E2 maximum traction trucks. This order was completed during the fall of 1924.

A Minneapolis office was established for LWNESCCo. in 1924 at 28 South 10th St.. This was moved in 1925 to 403 Essex Building.

A carhouse fire in Grand Rapids, Michigan, on July 18, 1924, destroyed 40 of their older cars. As a result the Grand Rapids Railway began planning for special lightweight cars to re-equip and modernize their street railway system. Three carbuilders which submitted designs and bids were each authorized to build one sample car. G. C. Kuhlman Car Company's car was named OHIO, St.Louis Car Company's car St.LOUIS, and LWNESC Company's car MINNESOTA (later #375). The order for this car, a Car B design (36'0" long), was received September 23, 1924. Construction began October 20, 1924, completed during March 1925, and shipped to Grand Rapids. It was painted in Minnesota colors, maroon and gold.

At the request of Grand Rapids Railway the car was originally fitted with rattan seats as part of their experiment. After five months operation it was determined that deluxe furnishings and appearance would definitely attract and increase traffic. The car was re-fitted with deluxe type seats (individual cushions and backs), rubber interlocking tile floor, exterior skirting, and repainted in attractive colors. We have not located information as to performance evaluations o the three sample cars. We do know that St.Louis Car Company received the order for the balance of 27 cars in 1926.

Two additional car orders were processed by the Snelling Shops simultaneously with the Grand Rapids car but they were of a slightly different design. Five cars for Duluth Street Railway (301-305) for operation in Superior, Wisconsin, and four cars for Twin City Rapid Transit Co. (1-4) for operation in Stillwater, Minnesota. These nine cars started through the shops October 20, 1924, and were completed in April 1925. All were also painted maroon and gold.

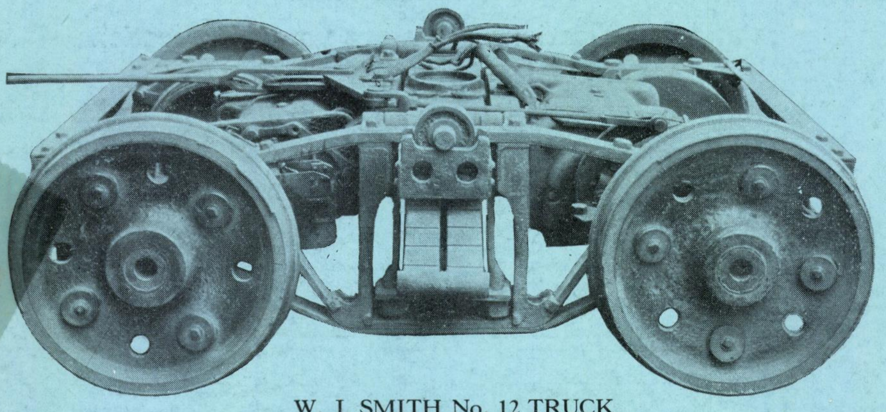
Many other companies showed interest in the cars and many quotations were issued. We know that Lancaster, Pennsylvania; Johnstown, Pennsylvania; and Brooklyn, New York, received price quotations. Presumably the established commercial carbuilding firms, geared for high production of standardized cars, were more competitive in their prices, for no additional orders were received during 1925 or early 1926.

LWNESCCo. was successful in obtaining only two additional car orders. These were for 33 cars of a modified Car B design which were built in the Snelling Shops during August through October 1926.
Twenty cars for the Tennessee Electric Power Company:
10 cars for Chattanooga, (131-140), double-end, 40'3½" long, 8'6" wide, weight 29,000 pounds, and seated 44 persons.
10 cars for Nashville (600-609), double-end, same measurements, weight 28,800 pounds.
Thirteen cars for the Southern Indiana Gas & Electric Company, Evansville, Indiana.
37'6" long, 8'6" wide, seated 46 person. 401-407 were double-end, weight 28,300 pounds.
408-413 were single-end, same measurements, weight 26,750 pounds.
All 33 cars were individually named (see partial list appended) and were equipped with Twin City #12 trucks and four G.E. 258F motors.

LWNESCCo. was still in existence in 1927 for supplying parts. However as parts were readily available from TCRT's Transit Supply Company there was no real reason for the continued existence of LWNESCCo. and the company subsequently went out of business. A. L. Drum was appointed Receiver of the bankrupt Detroit United Railways and A. J. Chaleen became its Superintendent of Shops.

LIGHT WEIGHT NOISELESS ELECTRIC STREET CAR COMPANY

The Modern Light Weight Noiseless Truck

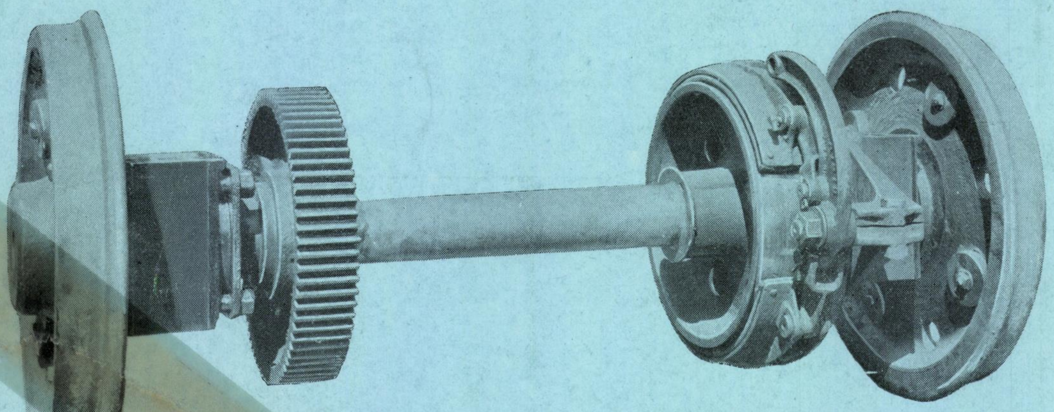


W. J. SMITH No. 12 TRUCK
Weight Complete Without Motors 4,000 Lbs.

MODERN LIGHT WEIGHT NOISELESS TRUCK, Easy Riding, Compact. Strong, Heat Treated, Equipped with Hyatt Roller Bearings and Concentric Clasp Axle Drum Brakes.

HYATT ROLLER BEARINGS reduce power required for starting and greatly improve **coasting** while the **Concentric Clasp Axle Drum Brakes** provide fast, efficient, comfortable and noiseless braking, making possible more coasting with greatest safety and power economy.

The reduction in weight is obtained in the compactness of the truck and simplicity of design and not in sacrificing the strength of any of the truck members.



AXLE MOUNTING OF INSIDE JOURNALS
Equipped with Hyatt Roller Bearings and W. J. Smith
Concentric Clasp Axle Drum Brake

Large saving in wheel mileage, brake shoes, and car service labor for brake adjustment and inspection.

Manufactured and Sold by

LIGHT WEIGHT NOISELESS ELECTRIC STREET CAR COMPANY
1745 Illinois Merchants Bank Building,
CHICAGO

LIGHT WEIGHT NOISELESS ELECTRIC STREET CAR COMPANY

1745 ILLINOIS MERCHANTS BANK BUILDING
CHICAGO

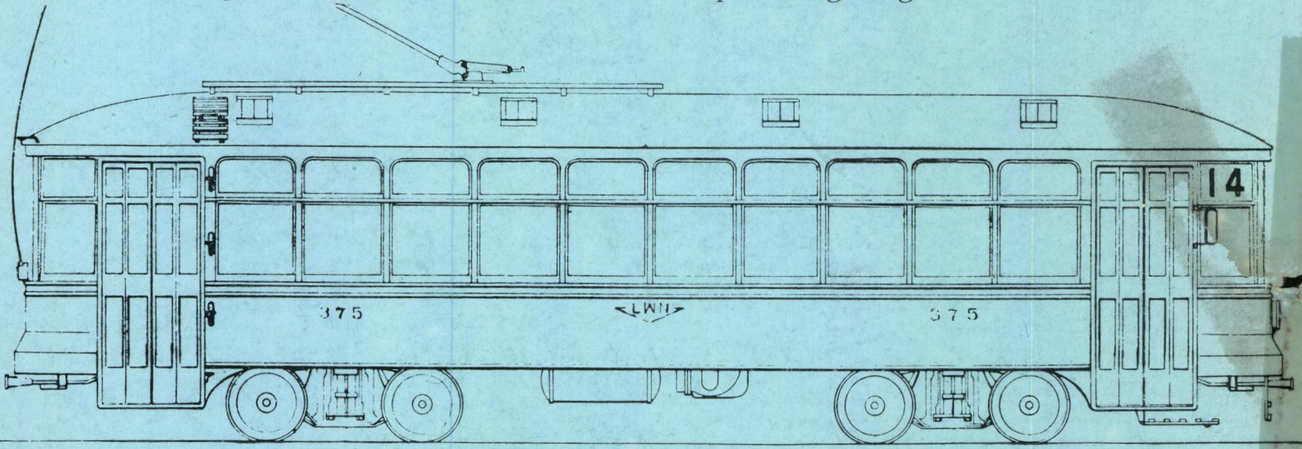
Manufacturers of Electric Street Cars

Shops at St. Paul, Minn.

Cars of Your Design and Specifications. Send us your Specifications.

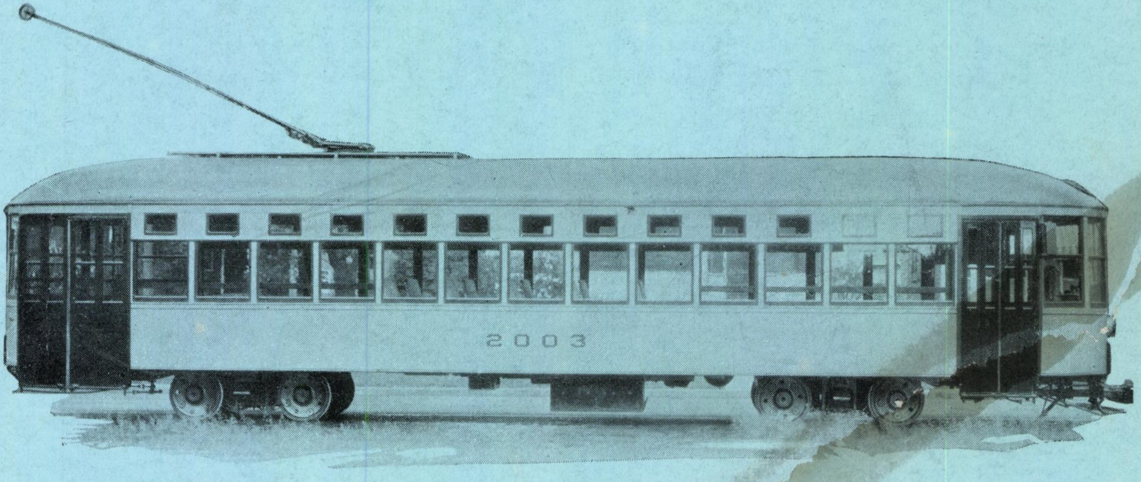
Light Weight Noiseless Cars of our Design and Specifications

Now completing the construction of Fifty Cars for One-Man, Two-Man or Two Car Train Units for Chicago Surface Lines under the Design and Specifications of the Chicago Surface Lines and Board of Supervising Engineers.



LIGHT WEIGHT NOISELESS ONE-MAN TWO-MAN CAR
22,000 to 24,000 Pounds Complete, Length, 36 ft., Seats 43

Light Weight Car on W. J. Smith Noiseless Light Weight Trucks equipped with Hyatt Roller Bearings and Concentric Clasp Axle Drum Brakes provides Faster Acceleration, Faster and More Coasting, Faster and More Comfortable Braking, resulting in Faster Schedules, with greatly reduced Power Consumption and Less Automobile Interference.



ONE-MAN TWO-MAN LIGHT WEIGHT CAR OF TWO CAR TRAIN UNIT
26,000 to 28,000 Pounds Complete, Lenght 46 ft., Seats 48

POWER CONSUMPTION TESTS OF CAR No. 2003 AS SINGLE CAR UNIT

	Standard Weight D. T. Car	Light Weight D. T. Car	Saving
K. W. H. PER CAR MILE			
Under Similar ACTUAL SERVICE CONDITIONS	3.57	2.00	43.9%
Schedule Speed in Miles Per Hour	10.27	10.27	......
K. W. H. PER CAR MILE			
Under TEST CONDITIONS each car carrying a load equivalent to 58 Passengers	3.71	2.35	36.7%
Average Speed in Miles Per Hour	15.7	16.6	10.3%

Net Result:
Light Weight Car Makes **10.3%** Faster Schedule with **36.7%** saving in Power.

Light Weight Noiseless Electric Street Car Company

1745 Illinois Merchants Bank Building
CHICAGO

Manufacturers of Electric Street Cars

Shops at St. Paul, Minn.

Cars of Your Design and Specifications. Send us your Specifications.
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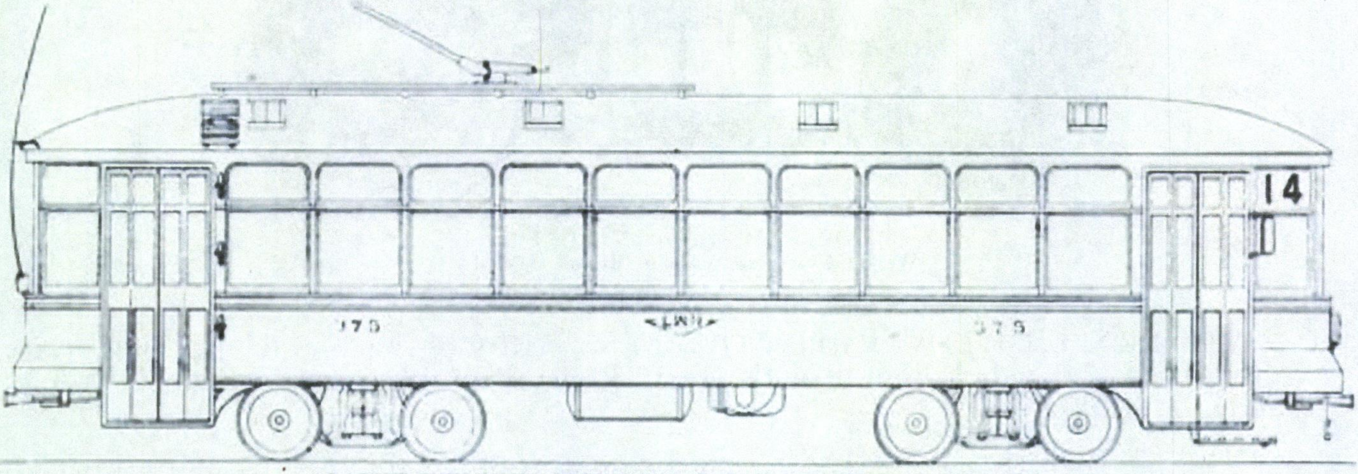

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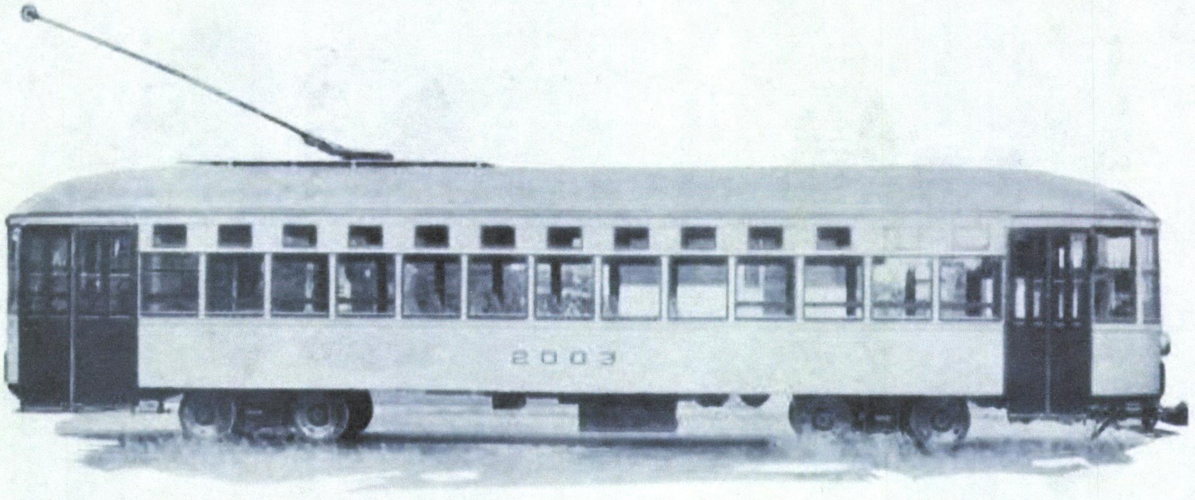
22,000 to 24,000 Pounds Complete, Length 36 ft., Seats 43

Light Weight Car on W. J. Smith Noiseless Light Weight Trucks equipped with Hyatt Roller Bearings and Concentric Clasp Axle Drum Brakes provides Faster Acceleration, Faster and More Coasting, Faster and More Comfortable Braking, resulting in Faster Schedules, with greatly reduced Power Consumption and Less Automobile Interference.



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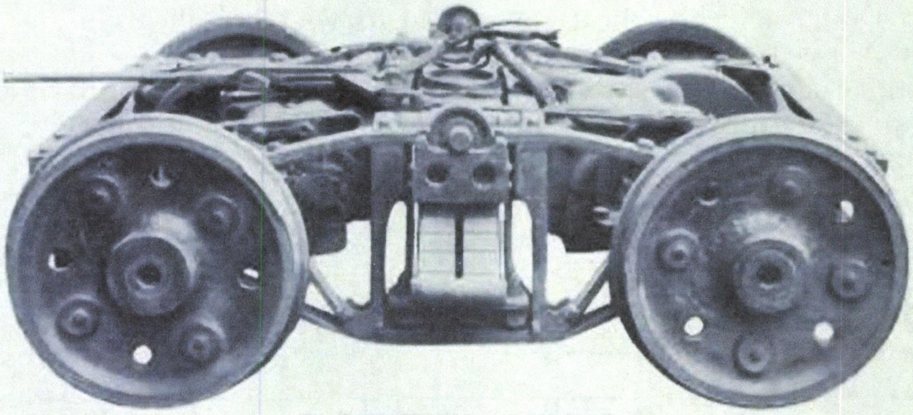
Light Weight Noiseless Electric Street Car Company

The Modern Light Weight Noiseless Truck



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Weight Complete Without Motors, 4,000 Lb.

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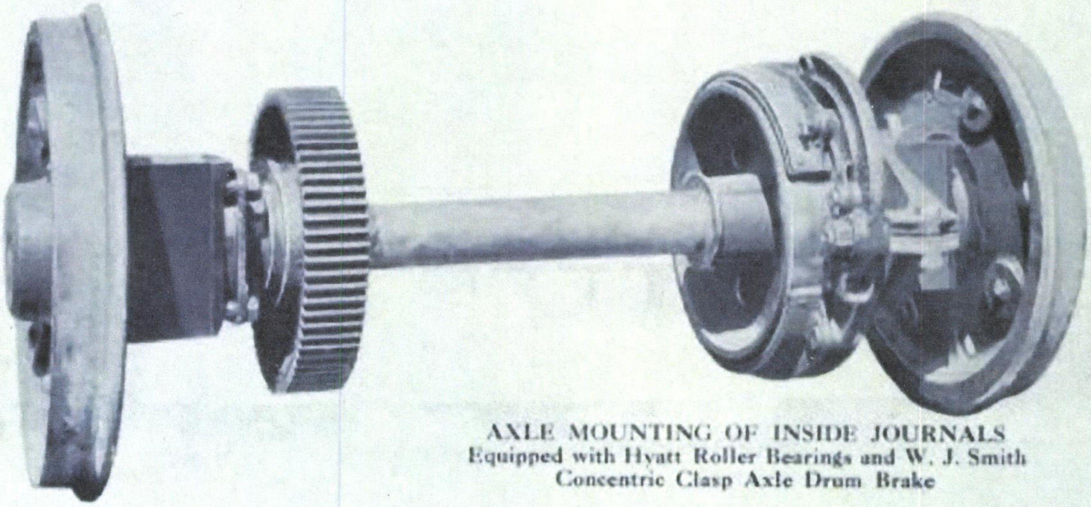
HYATT ROLLER BEARINGS reduce power required for starting and greatly improve **coasting** while the **Concentric Clasp Axle Drum Brakes** provide fast, efficient, comfortable and noiseless braking, making possible more coasting with greatest safety and power economy.

The reduction in weight is obtained in the compactness of the truck and simplicity of design and not in sacrificing the strength of any of the truck members.



AXLE MOUNTING OF INSIDE JOURNALS
Equipped with Hyatt Roller Bearings and W. J. Smith
Concentric Clasp Axle Drum Brake

Large saving in wheel mileage, brake shoes, and car service labor for brake adjustment and inspection.

Manufactured and Sold by

LIGHT WEIGHT NOISELESS ELECTRIC STREET CAR COMPANY
1745 Illinois Merchants Bank Building
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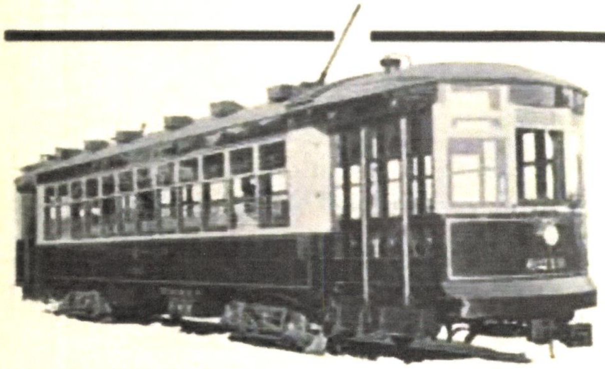
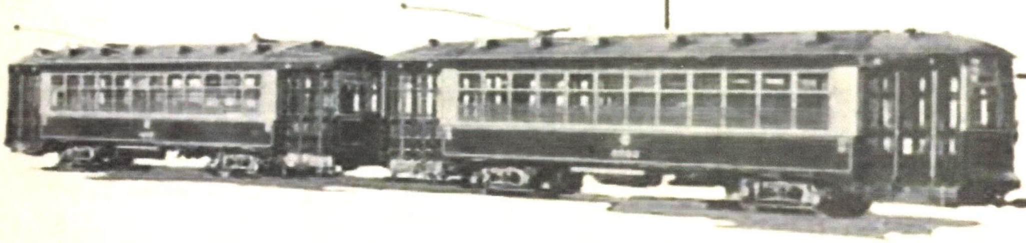


50 of these cars

Now being constructed for Chicago Surface Lines. Designed for One-man, Two-man or Two-car train units under the design and specifications of the Chicago Surface Lines.

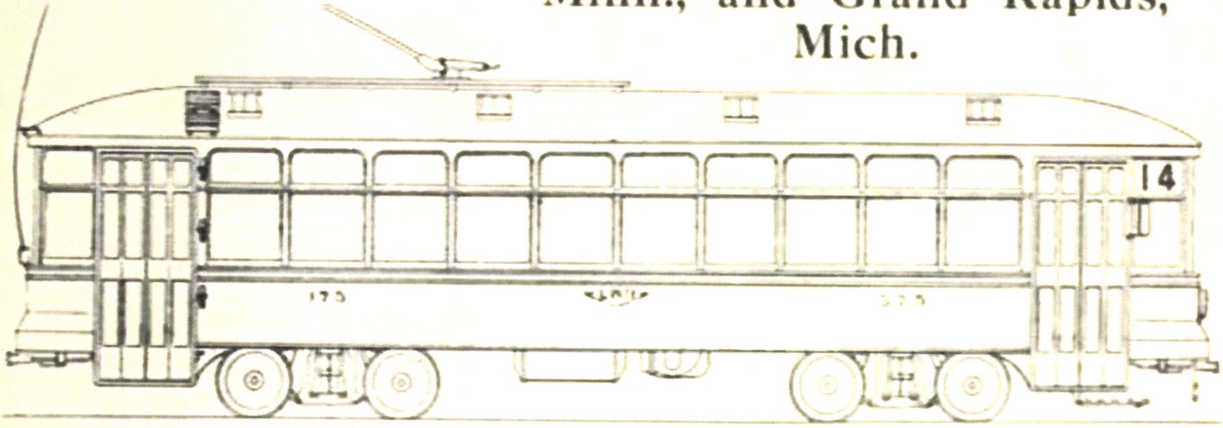


Two-car train unit for Chicago Surface Lines

10 LIGHT WEIGHT NOISELESS CARS

Completely equipped shops for building cars of your design and specifications.

now being constructed for Duluth, Minn., Stillwater, Minn., and Grand Rapids, Mich.



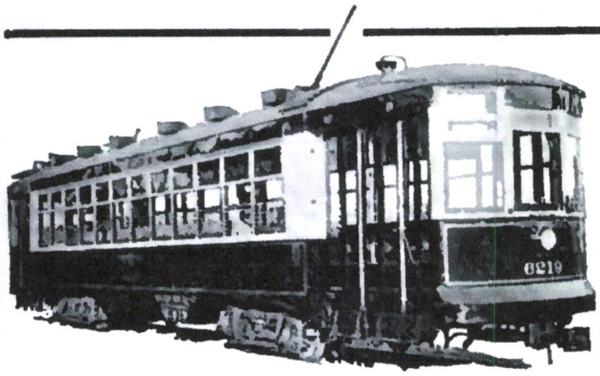
LIGHT WEIGHT NOISELESS ONE-MAN TWO-MAN CAR
22,000 to 24,000 Pounds Complete, Length 36 ft., Seats 43
10% faster schedule speed. 40% saving in power compared with standard weight car

Light Weight Car on W. J. Smith Noiseless Light Weight Trucks equipped with Hyatt Roller Bearings and Concentric Clasp Axle Drum Brakes provides Faster Acceleration, Faster and More Coasting, Faster and More Comfortable Braking, resulting in Faster Schedules, with greatly reduced Power Consumption and Less Automobile Interference.

"Send Us Your Specifications"

Light Weight Noiseless Electric Street Car Company
1745 Illinois Merchants Bank Building, CHICAGO

Manufacturers of Electric Street Cars
Shops at St. Paul, Minn.



50 of these cars

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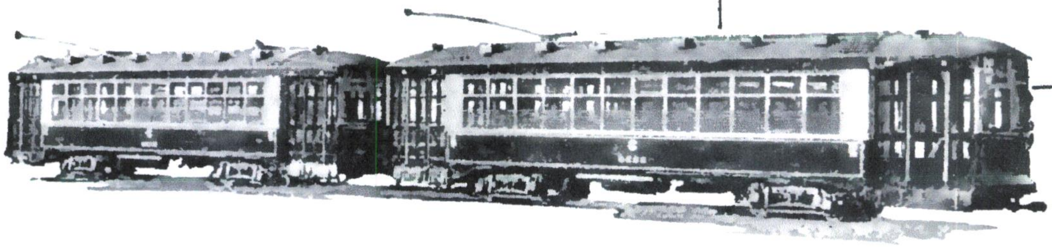

Two-car train unit for Chicago Surface Lines

10 LIGHT WEIGHT NOISELESS CARS

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LIGHT WEIGHT NOISELESS ONE-MAN TWO-MAN CAR

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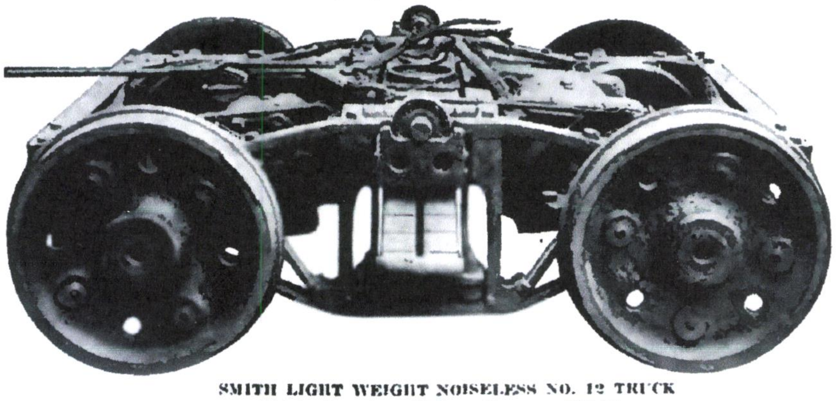
ONE-MAN TWO-MAN LIGHT WEIGHT NOISELESS CAR FOR TWO-CAR TRAIN UNIT

26,000 to 28,000 Pounds Complete, Length 46 ft., Seats 48

Send Us Your Specifications for Cars and Trucks



SMITH LIGHT WEIGHT NOISELESS NO. 12 TRUCK
Weight Complete Without Motors 1,000 Lbs.

Light Weight Noiseless Electric Street Car Company

1745 Illinois Merchants Bank Building, CHICAGO

Manufacturers of Electric Street Cars

Shops at St. Paul, Minn.

A short keyway extending for about 3 in. from the shoulder near the small end of the spindle forms a guide for a short pin projecting from the inside face of the sleeve, and serves to keep the latter from rotating as the nut is turned in either direction.

This expanding mandrel has a large head at the opposite end from the adjustment nut just described, and is threaded on the inside to fit the threads on the turret lathe headstock spindle.

ALSO DESIGNED FOR ENGINE LATHE

When the available turret lathes are crowded with work, it is sometimes necessary to finish armature bearings in an ordinary engine lathe. Under these conditions the work must be done between the centers of the lathe, and a somewhat different type of expanding mandrel is used to hold the bearings. In this type of mandrel a nut is provided on each end, one to force the sleeve on the tapered spindle, and the other to force it off. A keyway the entire length of the spindle keeps the sleeve from turning as it is forced on or off. Although the construction of this type of mandrel is somewhat simpler than the one previously described, the turret lathe method is used whenever machines are available, because it is necessary to remove the mandrel from between the centers of the engine lathe each time a bearing is to be put on or taken off. The entire outside surface of the bearing is finished on one or the other type of mandrel in one operation.

Dowel-pin holes or keyways, depending on the method of holding the bearing in the motor head, are next put in.

After the shell has been babbitted, the last operation consists of boring the babbitt lining to size. This is done on an engine lathe equipped with a universal chuck and a special tool post, which enables a boring bar to be used in the lathe.

New Chicago Multiple-Unit Cars Have Automatic Exit Doors

These New Type Cars of the Chicago Surface Lines Are Designed to Give Maximum Flexibility Either as Single Units or in Two-Car Trains — They Are Arranged for Double-End Operation and Are Equipped with Two 65-Hp. Motors per Car Mounted on Maximum Traction Trucks

A GROUP of 100 new cars for the Chicago Surface Lines on which preliminary specifications were announced in the issue of ELECTRIC RAILWAY JOURNAL of April 12, 1924, are rapidly nearing completion. Some of the cars have already been put in service and it is expected that the entire lot will be on the street in regular operation before the Christmas holiday period.

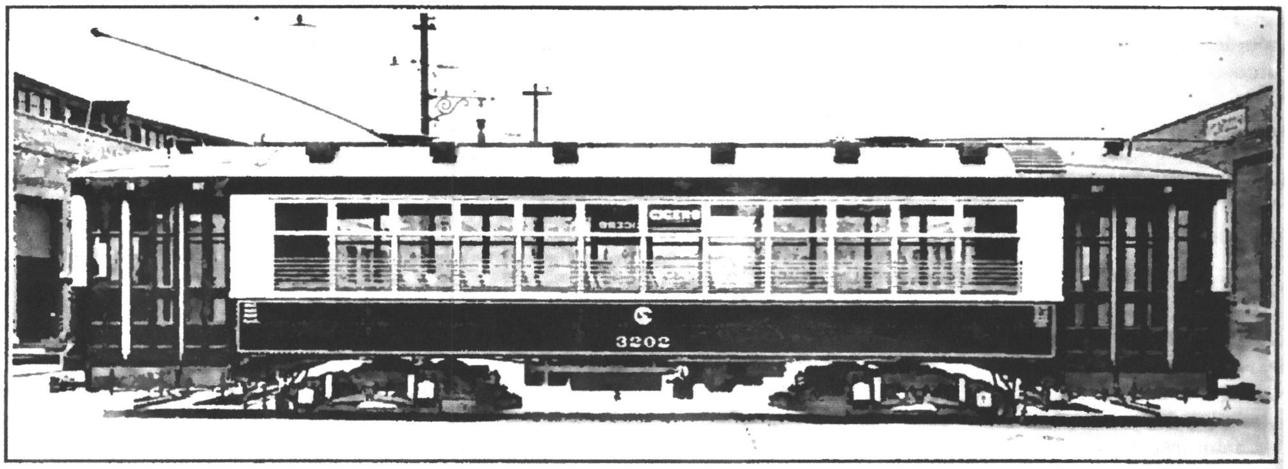
Although the design of this latest addition to the rolling stock equipment of the Surface Lines utilizes many structural features common to other groups of cars built by that property within the past few years, a number of interesting innovations are also incorporated. These include the use of G.E. type M multiple-unit control with two motors per car and maximum traction trucks, and an unusually flexible arrangement of pneumatic door control in which the exit doors are automatically operated by alighting passengers. A similar type of automatic exit door control was installed on a group of 45 double-truck, one-man cars described in the ELECTRIC RAILWAY JOURNAL of Sept. 30, 1922, which have now been in service for a period of more than two years. This latest design, however, represents an extension of the use of the automatic device to cars for service in congested districts either as single units or in multiple-unit trains.

A substantial saving in weight and cost in comparison with four-motor equipment was obtained by the use of two GE-275, 65-hp. motors per car mounted on Brill 39-E maximum traction trucks. The selection of this type of motor equipment instead of four smaller motors per car was also influenced by the desire to obtain rugged, comparatively low-speed machines for the severe service conditions encountered in Chicago. Such equipment gives large-size armature shafts, gears and pinions, and makes the motor parts interchangeable with those used on other groups of cars constructed within the past few years.

Multiple-unit control gives these cars maximum flexibility and permits single units to be operated during non-rush periods and to be readily coupled on the street into trains for rush-hour service without serious delays. Double-end equipment permits them to be operated on lines having stub terminals. Tomlinson automatic car and air couplers facilitate coupling and uncoupling on the street, but the electrical connections between cars are made with flexible jumpers. This application of multiple-unit control marks a further extension of train operation in Chicago, which for a number of years has been carried out with motor cars and center-entrance trailers.

MAXIMUM SPEED IN LOADING AND UNLOADING

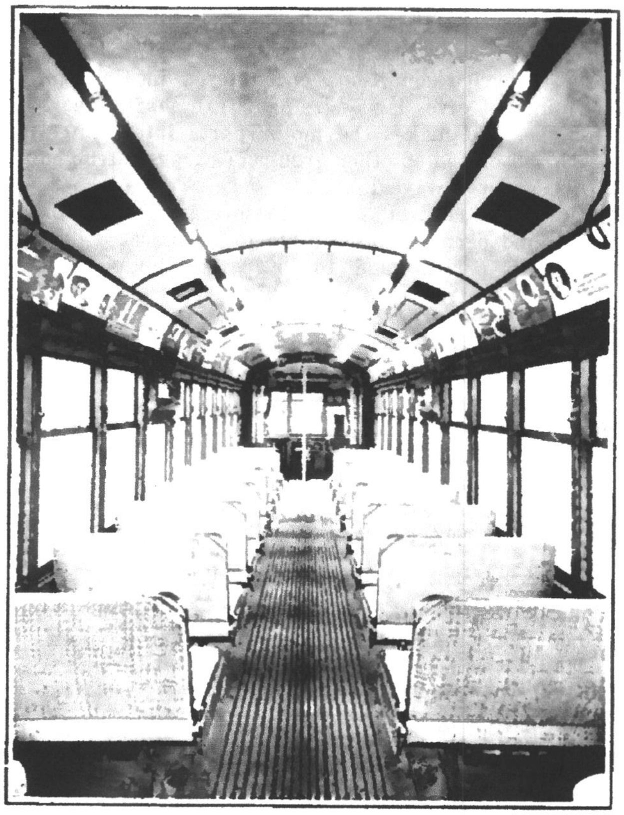
National Pneumatic door-control equipment is arranged to give maximum speed of loading and unloading in either street or subway operation. The door and car control are interlocked to prevent starting with the doors open, and full Safety Car Devices apparatus is also used. Single-car units will be operated by two men. In trains of two cars there will be three men, two on the front car and one on the front end of the rear car. In either direction of operation, the doors at the rear end of each car may be con-



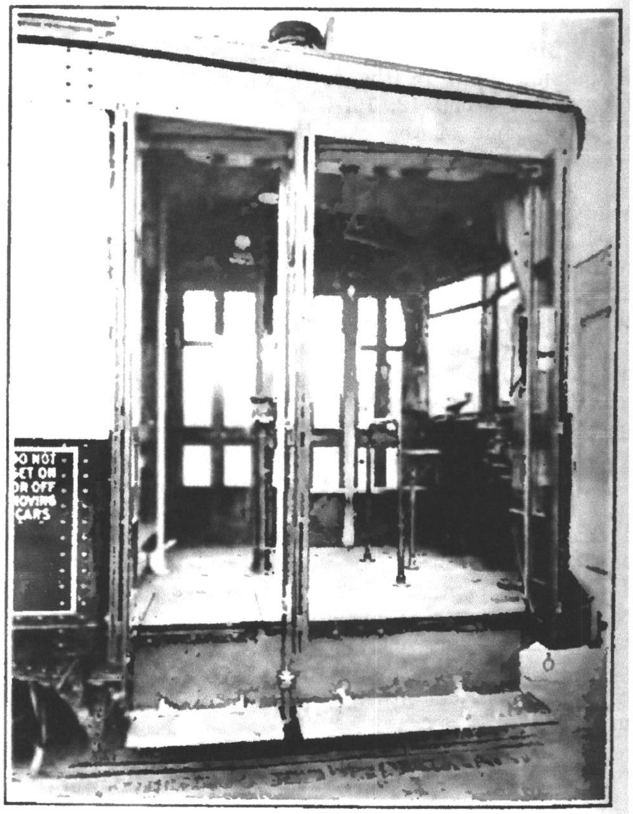
The New Chicago Surface Lines Cars Have Multiple-Unit Control and Are Arranged for Operation Singly or in Trains of Two Cars. Streamline Effect in the Body Gives It a Graceful Appearance

trolled by an operator on either platform, or by street collectors. This allows the rear door of the second car in a train to be opened and closed by the conductor stationed on the front platform of that car or by a man on the street supplied with a key to fit the door-control valve located on the outside near the rear door. The automatic exit doors are located on each platform as shown in the accompanying plan drawing, and those at the front end of each car are operative when the train is moving in that direction.

One of the principal features of the arrangement of doors when the cars are operated in trains is the grouping of the entrances at the center of the train. In other words, passengers enter the front car at the rear end and leave this car at either the rear or the front end, while they enter the rear car at the front end and leave at the same end. When street collectors are available, passengers may also be allowed to enter or alight from the rear end of the second car. This arrangement for loading both the front and rear cars at one point in the center of the train is expected to give more uniform distribution of passengers between the two cars than is obtained where the points of boarding the two cars are separated, as in the case of a rear loading motor car and a center loading trailer. In addition, this design is expected to avoid the delay and confusion resulting from passengers trying to board the train at two different locations.



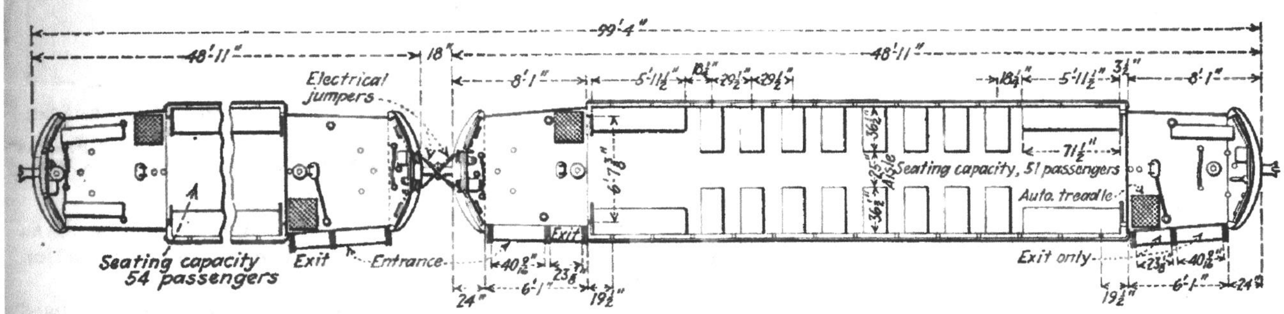
Simple Lines and Smooth Curves with the Dull Finished Cherry Trimming Feature the Interior of This Car. The Wide Aisle Facilitates Passenger Movement.



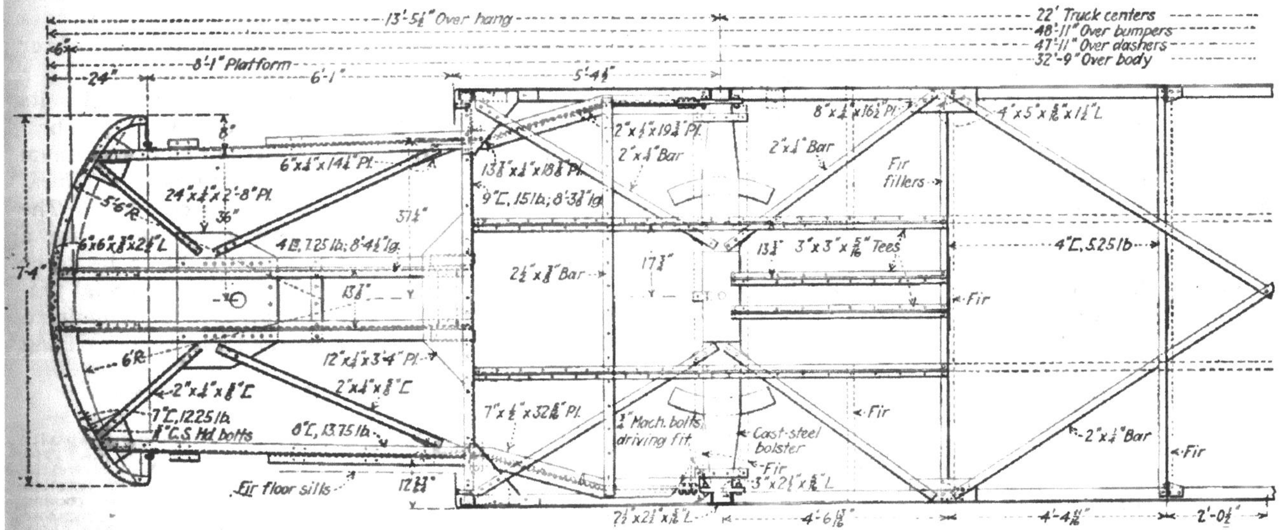
The Automatic Exit Doors Are Controlled by a Treadle in the Platform Floor. Passengers Board Through the Door at the Right and Leave Through the Automatic Exit.

The new cars were designed completely by the engineering division of the shops and equipment department of the Surface Lines under the direction of H. H. Adams, superintendent of shops and equipment. Fifty cars are being constructed in the West Shops of the company and the remaining 50 are being built to Surface Lines specifications and drawings by the Light-Weight Noiseless Electric Street Car Company in St. Paul, Minn. The two groups are identical in construction and all parts of the equipment and structure are being made as nearly interchangeable as possible to facilitate maintenance and repair. The general appearance corresponds with the arch-roof cars now in service on the Surface Lines and, as in former groups of cars, careful attention has been given to the matter of improving the appearance by giving the body a streamline effect.

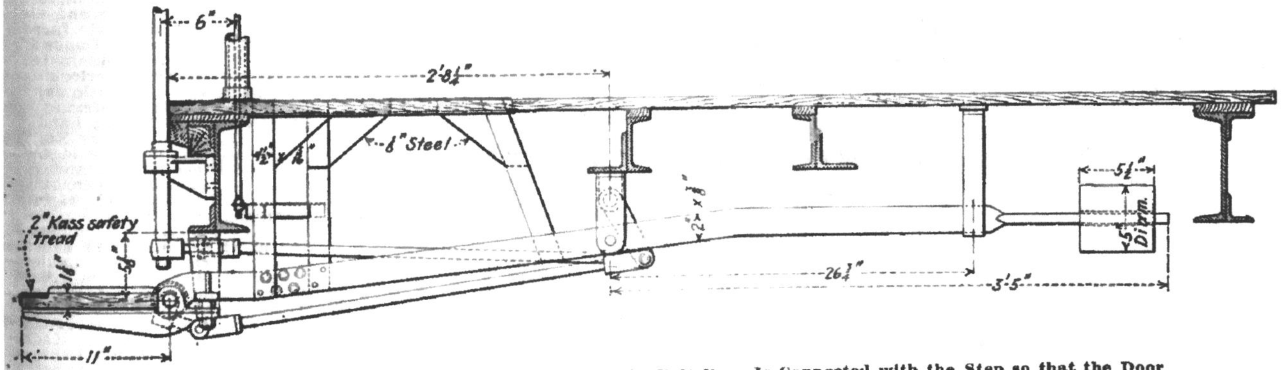
Minimum weight consistent with the severe service conditions encountered was another objective in the design. The complete cars weigh 41,000 lb. each. This weight is distributed between car structure and equipment as follows:


99'-4"
48'-11"
18"
48'-11"
Electrical jumpers
8'-1"
5'-11½"
18¼"
29½"
29½"
18¼"
5'-11½"
3½"
8'-1"
36½"
25"
Aisle
36½"
6'-7⅞"
71½"
Seating capacity, 51 passengers
Auto. treadle
Seating capacity 54 passengers
Exit
Entrance
Exit
40⅝"
23⅞"
24"
6'-1"
19½"
Exit only
23⅞"
40⅝"
19½"
6'-1"
24"

The Front Car of a Two-Car Train Seats 51 Passengers and the Rear Car Seats 54. Automatic Couplers Connect the Air Line, but the Electrical Connections Are Made with Jumpers


13'-5½" Over hang
22' Truck centers
48'-11" Over bumpers
47'-11" Over dashers
32'-9" Over body
6"
8'-1" Platform
24"
6'-1"
5'-4½"
8"
6"x¼"x14¼" Pl.
24"x¼"x2'-8" Pl.
36"
5'-6"R.
6"x6"x⅜"x2¼"L
4 [, 7.25 lb.; 8'-4½" lg.
37½"
13⅞"x¼"x18⅞" Pl.
9" [, 15 lb.; 8'-3⅞" lg.
2"x⅛"x19¾" Pl.
2"x¼" Bar
8"x¼"x16½" Pl.
2"x¼" Bar
4"x5"x⅝"x1½"L
Fir fillers
7'-4"
13⅞"
2½"x⅜" Bar
17⅞"
13¼"
3"x3"x 5/16" Tees
4" [, 5.25 lb.
Fir
6'R.
12"x¼"x3'-4" Pl.
2"x¼"x⅛" [
2"x¼"x⅛" [
7" [, 12.25 lb.
⅜" C.S. Hd. bolts
8" [, 13.75 lb.
7"x½"x32⅝" Pl.
¾" Mach. bolts driving fit
Cast-steel bolster
Fir
Fir
2"x¼" Bar
Fir
Fir floor sills
12⅞"
3"x2½"x⅝"L
7½"x2½"x⅝"L
4'-6 11/16"
4'-4 11/16"
2'-0½"

The Underframe Is Designed to Withstand the Severe Conditions Encountered in Chicago Service and Also to Meet the Requirements of Train Operation


6"
2'-8¼"
⅛" Steel
1½"x⅛"
2" Kass safety tread
1⅛"
5⅛"
11"
2"x⅜"
26¾"
3'-5"
5½"
5" Diam.

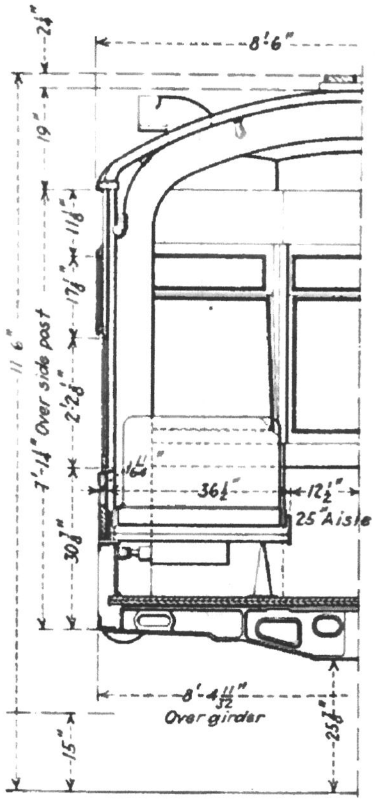
The Treadle Mechanism for Controlling the Automatic Exit Door Is Connected with the Step so that the Door Remains Open Until the Alighting Passenger Steps Off to the Street

	Pounds
Car body	14,100
Trucks without motors and gears	11,280
Motors and gears	5,000
Electrical equipment	3,100
Air brakes, hand brakes, door equipment, couplers and piping	5,250
Body and vestibule seats	1,350
Sign boxes, register equipment, curtains and miscellaneous accessories	920
	41,000

The general dimensions are shown in the tabulation below:

Length over bumpers	48 ft. 11 in.
Length over corner posts	32 ft. 9 in.
Width over all	8 ft. 6 in.
Seating capacity, first car	51
Seating capacity, second car	54
Width of aisle	25 in.
Door opening in clear, rear entrance of front car and front entrance of rear car	40 in.
Door opening in clear, rear exit of front car and front exit of rear car	23½ in
Door opening in clear, front exit of front car	62 in.
Height, rail to trolley board	11 ft. 6 in.
Height, rail to floor	37½ in.
Height, rail to side sill	31½ in.
Height, rail to step	15 in.
Height, step to platform	13¾ in.
Height, platform to body floor	8⅜ in.
Side-post centers	29½ in.
Truck wheelbase	4 ft. 10 in.
Truck centers	22 ft.

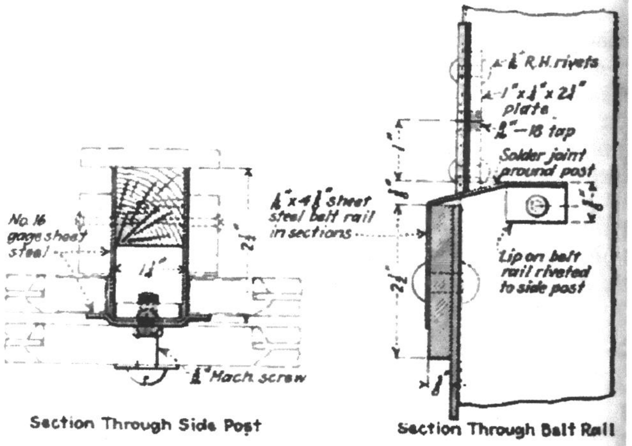
American Electric Railway Engineering Association standard parts and recommended dimensions have been used as far as possible throughout the body structure and equipment.



Cross-Seats Are 36½ In. Wide, and for an 8-Ft. 6-In. Over-all Width an Aisle Width of 25 In. Is Obtained by Making the Wall Thickness Below the Belt Rail Only 1 11/64 In.

The side girder plates are made of No. 12 gage steel. Each side is reinforced at the lower edge with 3-in. by 2-in. by ⅜-in. angles and at the top edge by the belt rail, formed of 3/16-in. sheet steel and further reinforced with a 2½-in. by ⅜-in. bar. Seat support angles 1½ in. by 1½ in. by ¼ in. are placed longitudinally half way between the bottom and top edges of the girder and are cut for the side posts. These are formed of 3/16-in. sheet steel and correspond in design to the side posts used in the group of 45 one-man double-truck cars described in detail in this paper, issue of Sept. 30, 1922.

Drop-type platforms are carried on 8-in., 13.75-lb. channel platform knees, reinforced at the point of greatest stress by web plates and angles. Bumpers are 7-in., 12¼-lb. channels with the flanges turned in. The end sills consist of 9-in., 15-lb. channels secured to the side structure with gusset plates. Channels are used for the main body cross-sills and are of 4-in., 5¼-lb. section. The underframe is rigidly braced with diagonal members, as shown in the accompanying drawing of the construction of this part of the framing.


No. 16 gage sheet steel
1¼"
2¼"
¼" Mach. screw
⅛" x 4⅛" sheet steel belt rail in sections
¼" R.H. rivets
1" x ⅛" x 2¼" plate
¼"-18 tap
Solder joint around post
1"
⅞"
⅜"
Lip on belt rail riveted to side post
2¼"
⅛"
Section Through Side Post
Section Through Belt Rail

Pressed-Steel Side Posts Are Used. The Belt Rail of Pressed Steel Is Reinforced with a Flat Bar at the Upper Edge of the Side Girder

A combination of flat steel and wood carlines is used to support the roof in a manner similar to that which has been standard construction with the company for several years. The roofing material is ¼-in. Haskelite and the headlining is ¼-in. Agasote. Other details of the body structure and framing are very similar to a former group of 169 cars described in this paper for Sept. 8, 1923.

Car wiring both for control and auxiliary circuits is carried in "Duratube" except where exposed to abrasion or direct wheel wash, where it is put in aluminum conduit. The main motor cables are inclosed in "Duratube," cleated under the center of the car floor. The floor is carried continuously between trapdoors for a space about 8 in. wide, and this allows the cables to be carried past the trapdoor openings with no special provision for extra protection at this point. Aluminum motor junction boxes are used, and the heater wiring

SPECIFICATIONS FOR THE NEW CHICAGO MULTIPLE-UNIT CARS

Air brakes	G.E. CP-27, 16 cu.ft. capacity
Compressor	G.E. Typ
Control	G.E. Type M light-weight
Trucks	Brill 39E-2x, maximum traction
Roof, ¼-in Haskelite covered with No. 8 National prepared roofing	
Headlining	¼-in. Agasote
Interior trim	Cherry, stained dark with rubbed finish
Signal bell	Consolidated single stroke bells
Buzzers	Consolidated
Trimmings	Statuary bronze
Center bearings	Surface Lines standard plain type
Side bearings	Stucki
Conduits	Duratube and aluminum
Couplers	Tomlinson automatic car and air
Curtain material	Fabrikoid, double faced
Curtain fixtures	Railway Supply & Curtain Co. No. 30 "Duquad"
Destination signs	Hunter illuminated
Door-operating mechanism	National Pneumatic with interlocking control and automatic exits
Wheelguards	H-B Lifeguards
Hand brakes	Pittsburgh No. 35, drop handle
Hand straps	Rico sanitary No. 7
Heater equipment	Consolidated
Headlights	Trolley Supply—Surface Lines standard
Meters	Economy
Motors	Two G.E.-275, 65 hp.
Paint	Chicago Varnish Company and vitrolite enamel
Rails and stanchions	Aluminum
Registers	International R-7 and B-13 backs
Sand traps	Electric Service Supplies
Sash construction	Wood with brass channel on stiles
Sash fixtures	O. M. Edwards with lock on one side of sash and compression brake on opposite side
Seats	St. Louis
Step treads	Kass
Thermostat	Railway Utility
Trolley catchers	Trolley Supply
Trolley base	US-14
Trolley wheels	Railway standard 5-in.
Ventilators	Railway Utility with compensating intakes
Wheels	28-in. and 21-in., rolled steel
Window wipers	Railway type, hand operated

long the truss plank on the interior of the cars is carried in aluminum conduit.

In one sample car of this group "Romex" cables and iring were used. In this installation the insulated onductors are inclosed in fabric covering woven irectly over the conductors and then coated with flameroofing and waterproofing compound. This type of wiring was put in to obtain more experience with this material, which is believed to come within the tentative rules for car wiring presented by the 1924 A.E.R.E.A. committee on car and carhouse wiring.

Complete specifications for materials and equipment used on these cars are given in the table on the preceding page.

ERJ
3-7-1925

Duluth Street Railway, Duluth, Minn., has announced specifications on five new cars. The details follow:

Date order was placed	September, 1924
Date of delivery	February, 1925
Builder of car body	Light Weight Noiseless Electric Street Car Company
Type of car	One-man, double-truck passenger
Seating capacity	43
Total weight	22,000 to 24,000 lb
Bolster centers, length	17 ft 6 in
Length over all	35 ft. 10½ in
Truck wheelbase	4 ft. 6 in
Width over all	8 ft. 6 in
Height, rail to trolley base	10 ft. 5¼ in
Body	Steel
Interior trim	Philippine mahogany
Headlining	Agasote
Roof	Arch
Air brakes	General Electric CP-27
Armature bearings	Ball
Axles	Center bored
Bumpers	Oak with steel plate
Car signal system	Electric
Car trimmings	Bronze
Control	General Electric K-35
Destination signs	Hunter
Door operating mechanism	Air
Fare boxes	Cleveland
Wheelguards	Local standard
Heaters	Electric
Headlights	Golden Glow
Journal bearings	Hyatt roller
Motors	Four General Electric 258, inside hung
Sash fixtures	Twin City
Seats	Cross and longitudinal
Seating material	Rattan—spring cushion
Springs	Combination coil and elliptic
Step treads	Twin City
Trolley catchers	Knutson No. 3
Trucks	W. J. Smith No. 12
Wheels	26-in. rolled steel
Special devices	Simplex safety system

DIMENSIONS

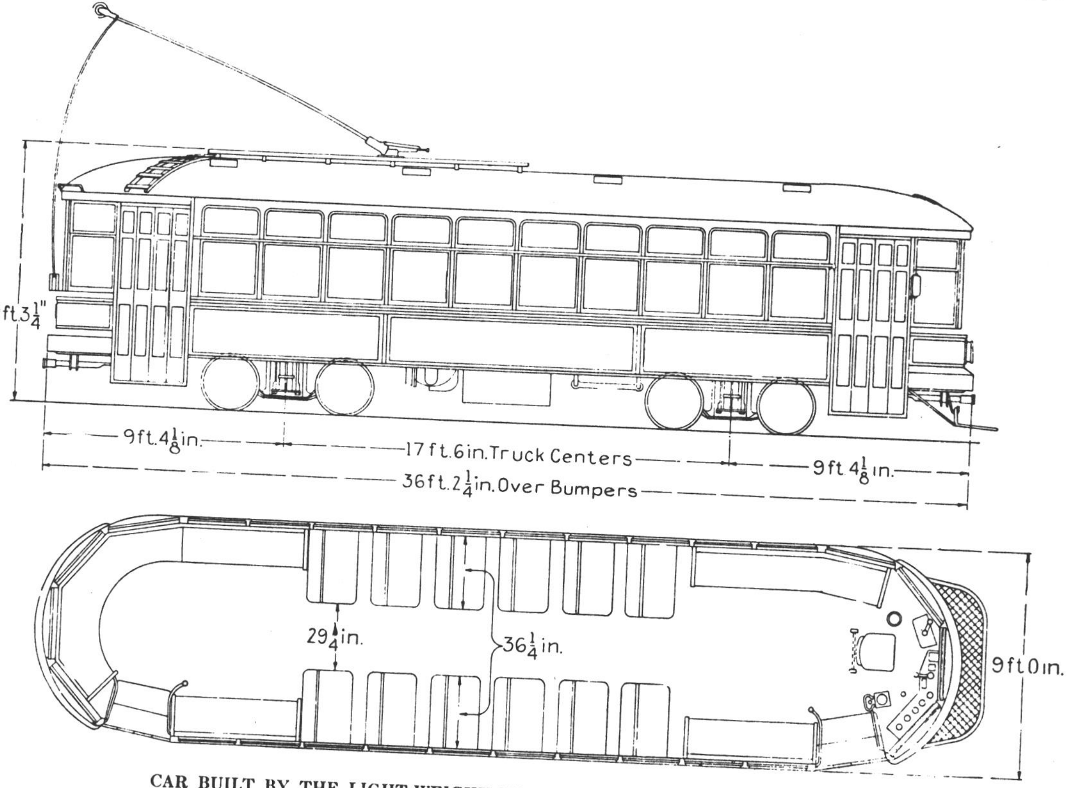
Length over bumpers	36 ft. 2¼ in.
Truck centers	17 ft. 6 in.
Wheel base	4 ft. 6 in.
Rail to step	13 in.
1st to 2nd step	9½ in.
2nd step to platform	9½ in.
Seating capacity	47
Width of seat	36 in.
Width of aisle	32½ in.
Diameter of wheels	26 in.

WEIGHTS

Car body including control and air brakes	13,150 lb.
Trucks, per pair	7,000 lb.
Motors and control	4,300 lb.
TOTAL	24,450 lb.

EQUIPMENT

Motors and type	Four GE-258
H.P. per motor	25
Gear ratio	74/13
Control	GE single-end Type K-35


10ft 3¼"
9ft. 4⅛ in.
17 ft. 6 in. Truck Centers
9 ft 4⅛ in.
36 ft. 2¼ in. Over Bumpers
29¼ in.
36¼ in.
9 ft 0 in.

CAR BUILT BY THE LIGHT-WEIGHT NOISELESS ELECTRIC STREET CAR CO.

Manufactures and the Markets

News of and for Manufacturers—Market and Trade Conditions
A Department Open to Railways and Manufacturers
for Discussion of Manufacturing and Sales Matters

Procedure of Federal Trade Commission Revised

Considerable reduction in the activity f the Federal Trade Commission is orecast by the recent change in its ules of procedure. Henceforth the ommission will proceed only with those ases where the interests of the pubic are substantially involved. It will efuse to interfere in controversies beween competitors where redress can e effected through the courts. Moreover, the respondents will always be granted an informal hearing before the omplaint is issued and the case will e dismissed if there is a voluntary cessation of the unfair practice. Two ases have already been dismissed under he new rules and well-informed opinion in Washington is that the number of complaints issued will probably be reduced about 80 per cent.

A further decrease in the commission's activity may be expected as the result of a rider attached to a recent appropriation bill. This would require the assent of both houses of Congress to resolutions directing special investigations unless the inquiry is made necessary by a violation of the antitrust laws.

First Grand Rapids Test Car Delivered

The first of three cars which are to be subjected this spring to competitive tests has been received by the Grand Rapids Railway, Grand Rapids, Mich. This car, or as the local railway officials prefer to call it, "electric motor coach," was made by the Light-Weight Noiseless Electric Car Company. The other two are being made by the St. Louis Car Company and the Kuhlman Car Company. These are expected to be delivered within the next two weeks.

L. J. DeLamarter, vice-president and general manager Grand Rapids Railway, and other officials made a preliminary test of the car and then ordered it to the shops for certain minor changes and additions to equipment. It is planned to install meters on all three cars to check every phase of their operation during the test. The first tryout indicated a substantial reduction in power consumption.

A reduction of 33,500 lb. has been made in the weight of the first car from that of the cars now being operated in Grand Rapids. It is constructed with heat-treated steel, specially prepared Haskellte veneered wood panels and aluminum to reduce the weight without impairing the strength and durability of the body. The axles are bored with a 2¼-in. hole throughout their length. Metal has been removed from the wheels by boring eight 3-in. holes in the web. This process is expected also to reduce noise due to vibration of the wheel. Roller bearings for journals and armatures are designed to provide quicker acceleration and to facilitate coasting. Automobile-type drum brakes are used on all four axles.

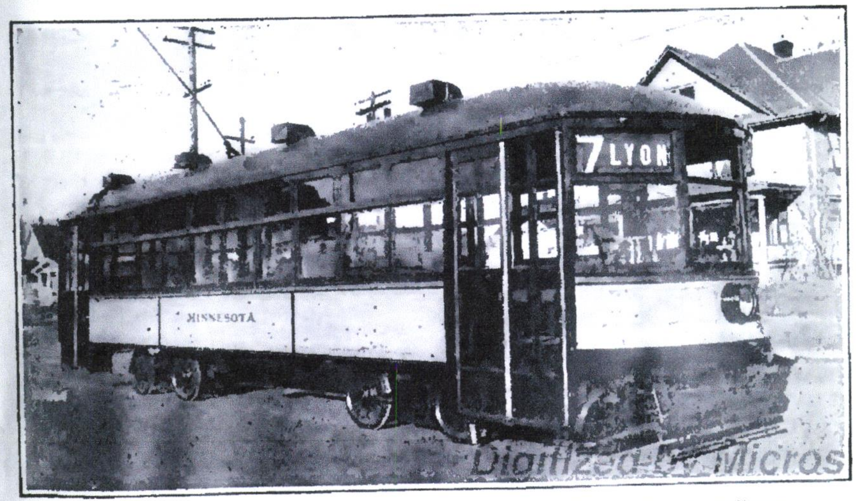
A new type of electric lighting arrangement designed by a member of the railway staff has been installed. This is intended to give the greatest intensity of light at the level of the eye of a seated passenger. The inside trim of the car is mahogany. The seats are wide with plenty of knee room and are of rattan stained green. The windows of the car are exceptionally wide and open upward. Low arm rests are provided.

The new cars are designed and equipped to be operated as single units with one trainman, or with a motorman and conductor as the density of traffic may require.

Door opening and closing at both ends can be controlled from the front platform. A comfortable seat specially designed is provided for the operator.

A feature of this first car is its outside coloring. It is painted in the colors of the University of Minnesota and carries the name "Minnesota" on the sides. The other two cars will be painted in the colors of the Ohio State and St. Louis Universities. Construction details are given in the accompanying table.

Date order was placed	Sept. 24, 1924
Date of delivery	March 24, 1925
Builder of car body	Lightweight Noiseless Electric Car Co.
Type of car	Closed passenger
Seating capacity	43
Total weight	24,500 lb.
Length over all	37 ft. 6 in.
Truck wheelbase	4 ft. 6 in.
Width over all	8 ft. 6 in.
Height, rail to trolley base	10 ft. 5 in.
Body	Haskelite
Interior trim	Mahogany
Headlining	Agasote
Roof	Arch
Air Brakes	Safety Car Devices Co. concentric clasp axle drum type
Armature bearings	Hyatt roller
Axles	Tubular
Bumpers	Lightweight-Noiseless Electric Car Co.
Car signal system	Faraday
Car trimmings	Lightweight-Noiseless Electric Car Co.
Center and side bearings	Lightweight-Noiseless Electric Car Co.
Conduits and junction boxes	Crouse-Hinds
Control	G.E. K-35-KK
Couplers	Lightweight-Noiseless Electric Car Co.
Curtain fixtures	National Lock Washer No. 86
Curtain material	Pantasote
Destination signs	Hunter
Door operating mechanism	National Pneumatic Co.
Fare boxes	Woods
Fenders	H. B. lifeguards
Gears and pinions	G.E. Grade M.
Hand brakes	Peacock staffless
Heater equipment	Railway Utility
Headlights	Crouse-Hinds
Journal bearings	Hyatt roller
Journal boxes	Lightweight-Noiseless Electric Car Co.
Lightning arresters	G.E. aluminum cell
Motors	Four G.E. No. 258, inside hung
Paint and varnish	Sherwin-Williams
Sanders	Keystone
Sash fixtures	National Lock Washer
Seats	Lightweight-Noiseless Electric Car Co.
Seating material	Rattan
Springs	Elliptic
Step treads	Kass
Trolley catchers	Ideal, No. 10
Trolley base	Ohio Brass, Form 1
Trolley	Wheels
Trucks	Smith No. 12
Ventilators	Railway Utility
Wheels	26-in. steel
Power-saving device	Economy meter



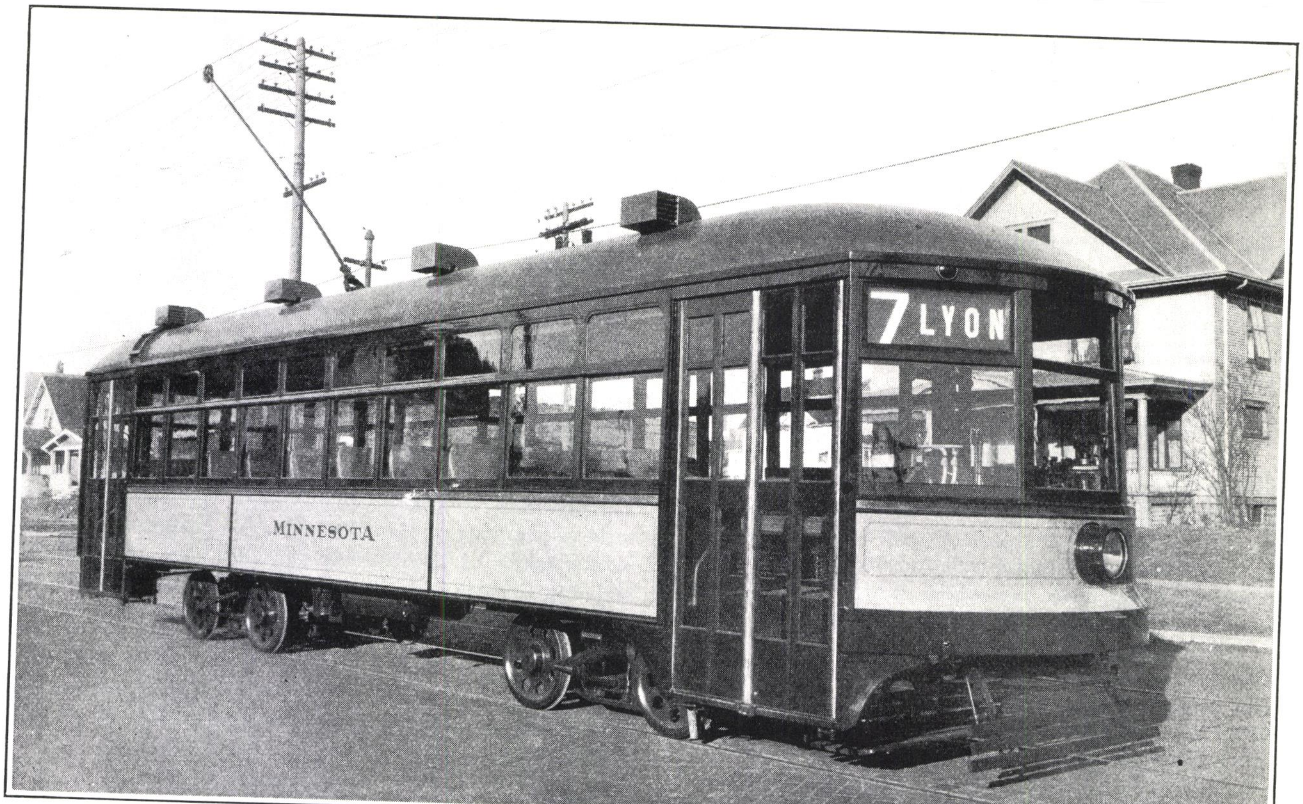
First of the Three Test Cars Being Built for the Grand Rapids Railway

Colorado Railway to Be Improved

The Southern Colorado Power Company, Pueblo, Col., will spend about $1,000,000 this spring for betterments. The work will include improvements to the car tracks in Pueblo, the erection of substations and the placing of larger capacity generators.

Metal, Coal and Material Prices

Metals—New York	Mar. 24, 1925
Copper, electrolytic, cents per lb	14.00
Copper wire base, cents per lb	16.50
Lead, cents per lb	8.93
Zinc, cents per lb	7.65
Tin, Straits, cents per lb	53.875
Bituminous Coal f.o.b. Mines	
Smokeless mine run, f.o.b. vessel, Hampton Roads, gross tons	$4.375
Somerset mine run, Boston, net tons	2.125
Pittsburgh mine run, Pittsburgh, net tons	1.825
Franklin, Ill., screenings, Chicago, net tons	1.95
Central, Ill., screenings, Chicago, net tons	1.90
Kansas screenings, Kansas City, net tons	2.75
Materials	
Rubber-covered wire, N. Y., No. 14, per 1,000 ft	$6.75
Weatherproof wire base, N.Y., cents per lb.	19.00
Cement, Chicago net prices, without bags	2.20
Linseed oil (5-lb. lots), N. Y., per gal	$1.12
White lead in oil (100-lb. keg), N. Y., cents per lb., carload lots	0.1272
Turpentine (bbl. lots), N. Y., per gal	0.935



The Sample Grand Rapids Car Built by the Light-Weight Noiseless Electric Street Car Company Is Painted in the Old Gold and Maroon Colors of the University of Minnesota

Many Innovations in Grand Rapids Cars

Light Weight, Reduced Noise, Attractive Appearance and Easy Riding Were Sought by Three Competing Car Builders Who Submitted Sample Cars—Truck Designs Include Many Novelties — Inside Journals, Roller Bearings and Fabric-Lined Clasp Brakes Are Used on All Three Designs—In This, the First of Three Articles, Is Described the Car Built by the Light-Weight Noiseless Electric Street Car Company

WITH the cars decorated with flags and motormen in chauffeurs' uniforms the Grand Rapids Railway Tuesday evening and Wednesday afternoon of this week formally demonstrated the three new electric coaches which will undergo tests here this spring and summer to decide what type of car the company will buy to replace some 40 cars lost in the carhouse fire of July 1 last. The three cars carried a group of men representing various railways and manufacturing companies. Wednesday, in addition to the officials, were carried city and county officials, prominent business men and leading citizens as guests of L. J. DeLamarter, vice-president and general manager Grand Rapids Railway. Opportunity was given them to travel on each of the coaches. The cars are ready for regular service and will be placed on various routes at once, the riders to decide which car they prefer by vote.

In general, the three cars are of the one-man, two-man type, arranged for single-end operation, and equipped with complete safety devices. Some wide departures from conventional car construction practice have been made for the purpose of trying out new ideas and introducing innovations which may help to stimulate further development. At the same time it was desired to introduce an element of novelty intended to attract car riders and overcome the tendency on the part of the public to look on the street car as an obsolete vehicle.

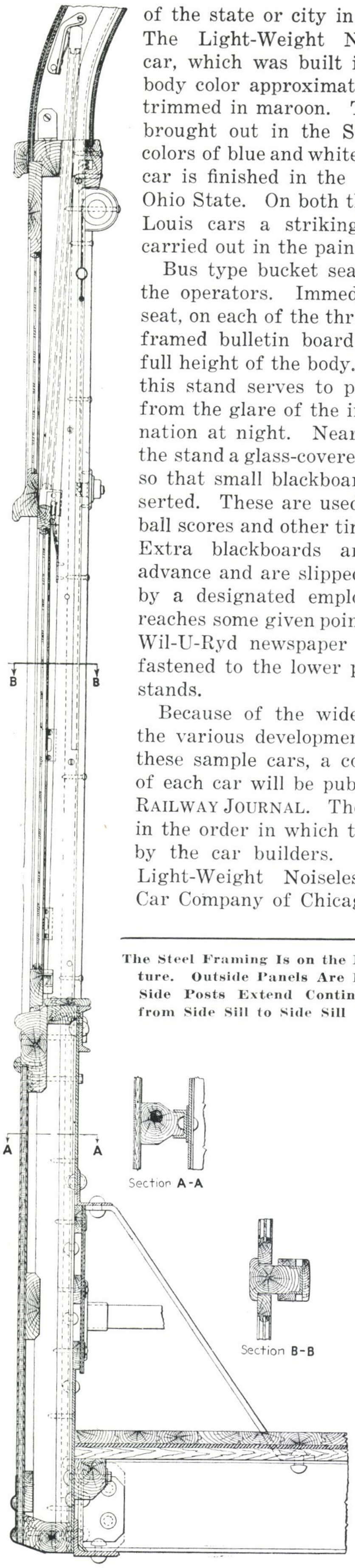
Departures from conventional design are particularly noticeable in the trucks. Inside journal boxes, roller bearings at the journals, fabric-lined clasp brakes on axle-mounted brake drums, hollow axles, automotive-type spring suspension, sound-deadened and cushioned wheels, sound-deadened gears, and many other similar innovations are included in one or more of the three trucks.

Likewise, many interesting features are incorporated in the body design and equipment. Light weight, noise reduction, passenger convenience and comfort, appearance and general merchandising value were the principal factors considered. Even the customary name has been changed. In a publicity campaign which is being undertaken in connection with the introduction of the new cars, they are referred to as "electric rail coaches" instead of street cars. All of this is for the purpose of stimulating interest, which it is hoped will increase riding and attract new business.

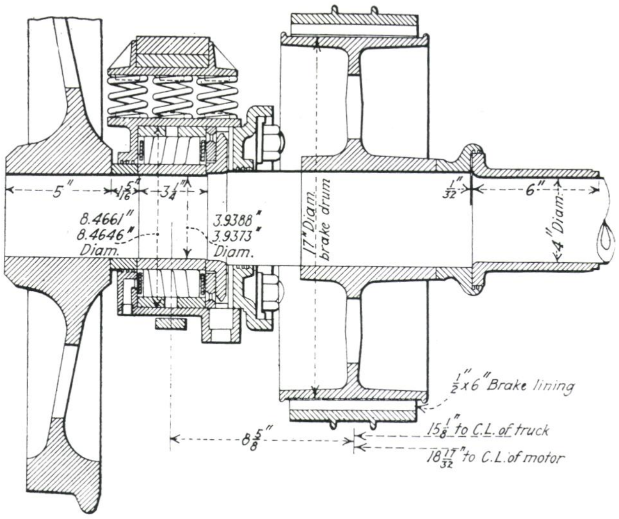
Each of the cars is painted in the university colors of the state or city in which it was built. The Light-Weight Noiseless company's car, which was built in Minnesota, has a body color approximating old gold, and is trimmed in maroon. The St. Louis car is brought out in the St. Louis University colors of blue and white, while the Kuhlman car is finished in the scarlet and gray of Ohio State. On both the Kuhlman and St. Louis cars a striking pennant effect is carried out in the painting scheme.

Bus type bucket seats are installed for the operators. Immediately back of this seat, on each of the three cars, a mahogany framed bulletin board stand extends the full height of the body. A curtain back of this stand serves to protect the operator from the glare of the interior body illumination at night. Near the upper part of the stand a glass-covered frame is arranged so that small blackboard slides can be inserted. These are used to announce baseball scores and other timely news bulletins. Extra blackboards are marked up in advance and are slipped into place quickly by a designated employee when the car reaches some given point on the line. Read-Wil-U-Ryd newspaper vending boxes are fastened to the lower part of the bulletin stands.

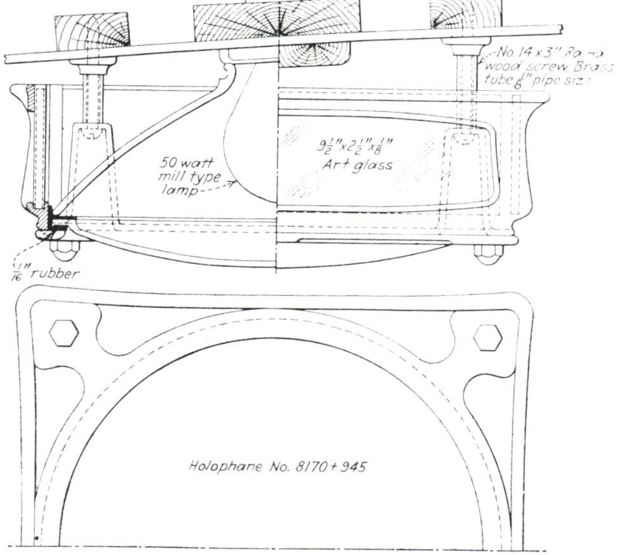
Because of the widespread interest in the various developments incorporated in these sample cars, a complete description of each car will be published in ELECTRIC RAILWAY JOURNAL. They will be described in the order in which they were delivered by the car builders. These include the Light-Weight Noiseless Electric Street Car Company of Chicago, the G. C. Kuhl-


B
B
A
A
Section A-A
Section B-B

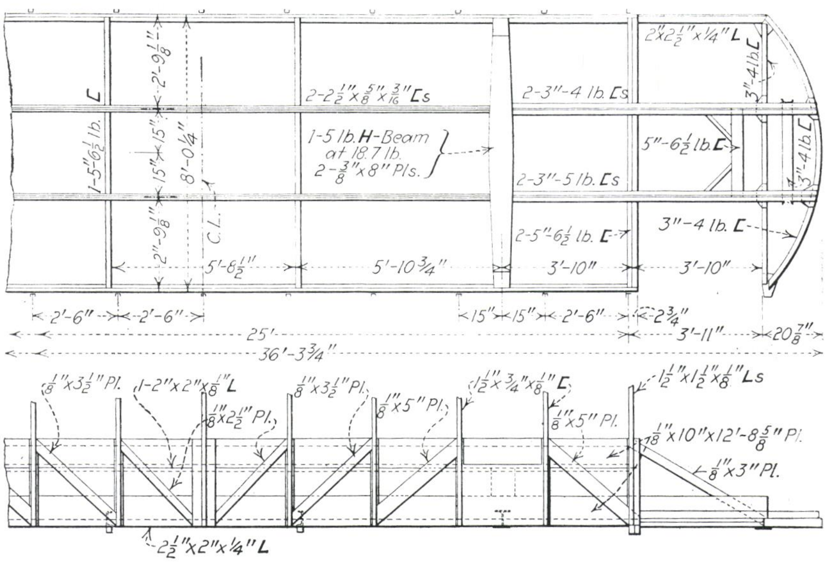
The Steel Framing Is on the Inside of the Side Structure. Outside Panels Are Haskelite. The Channel Side Posts Extend Continuously Across the Car from Side Sill to Side Sill


5"
5/16
3¼"
8.4661"
8.4646"
Diam.
3.9388"
3.9373"
Diam.
17" Diam. brake drum
1/32"
6"
4" Diam.
½"x6" Brake lining
8⅝"
15⅛" to C.L. of truck
18 17/32" to C.L. of motor

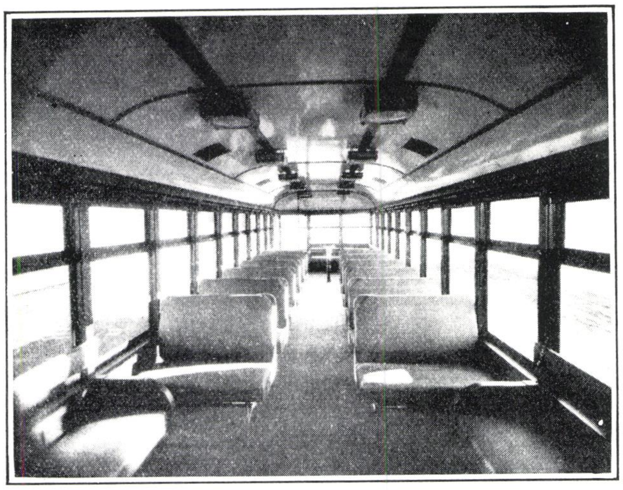
Construction and Position of the Roller Bearing, Inside Journal Box, Are Shown in This Section Drawing


No. 14 x 3" Rd. hd. wood screw. Brass tube ⅛" pipe size
9½"x2½"x⅛" Art glass
50 watt mill type lamp
1/16" rubber
Holophane No. 8170+945

The Specially Ground Light Reflectors Are Mounted in Square Art Glass Fixtures


2"x2½"x¼" L
3"-4 lb. [
2-2½"x⅝"x3/16" [s
2-3"-4 lb. [s
1-5 lb. H-Beam at 18.7 lb. 2-⅜"x8" Pls.
5"-6½ lb. [
3"-4 lb. [
2-3"-5 lb. [s
2-5"-6½ lb. [
3"-4 lb. [
2'-9⅛"
15"
15"
2'-9⅛"
8'-0¼"
1-5"-6½ lb.
C.L.
5'-8½"
5'-10¾"
3'-10"
3'-10"
2'-6"
2'-6"
15"
15"
2'-6"
2¾"
25'
3'-11"
20⅞"
36'-3¾"
⅛"x3½" Pl.
1-2"x2"x⅛" L
⅛"x2½" Pl.
⅛"x3½" Pl.
⅛"x5" Pl.
1½"x¾"x⅛" [
⅛"x5" Pl.
1½"x1½"x⅛" Ls
1/8"x10"x12'-8⅝" Pl.
⅛"x3" Pl.
2½"x2"x¼" L

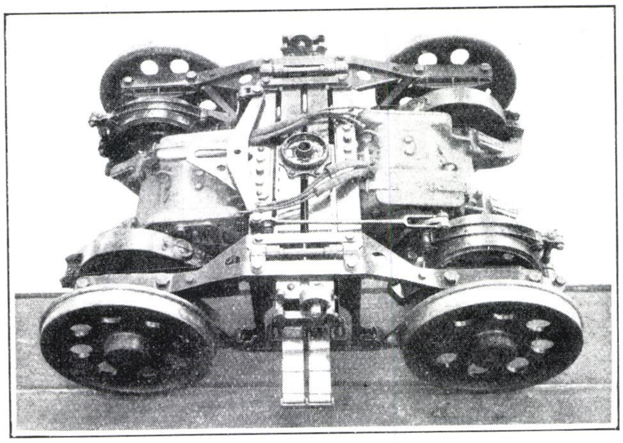
Two Longitudinal Floor Sills, Each Composed of 3-In., 5-Lb. Channels Back to Back, Are Carried the Entire Length of the Car. Diagonal Braces Reinforce and Stiffen the Side Frame Construction



Haskelite Is Used for the Headlining, and Formed Cornell Board Finishes the Ends of the Body Under the Hoods. Seats Are Upholstered in Rattan, Stained Green. Note the Appearance of the Special Lighting Fixtures

man plant of the J. G. Brill Company in Cleveland, and the St. Louis Car Company of St. Louis, Mo.

The sample car submitted by the Light-Weight Noiseless Electric Street Car Company was built in the Snelling Avenue shop of the Twin City Rapid Transit Company. This car is 37 ft. 6 in. long over all, 8 ft. 6 in. maximum over all outside width and 10 ft. 5¼ in. high from rail over trolley board. It weighs 25,000 lb. and seats 45 passengers.



Carefully Machined Parts Feature the Truck Construction

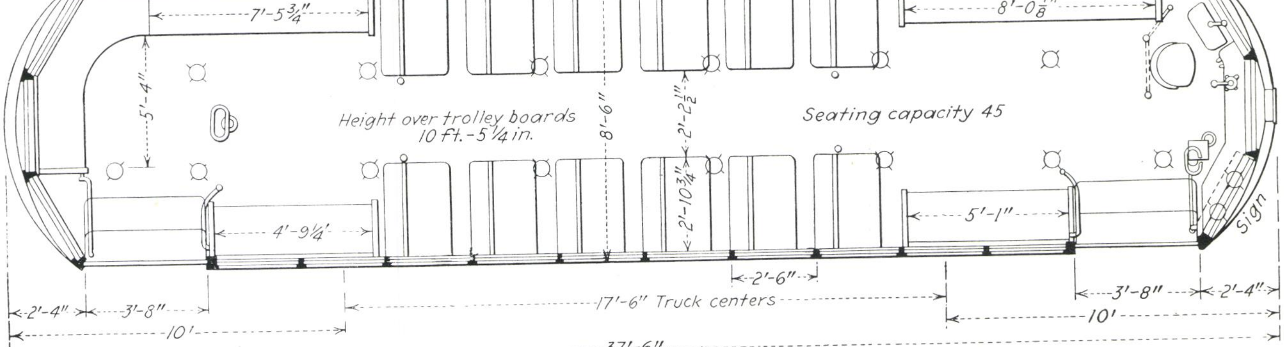
Inside journal boxes are equipped with Hyatt roller bearings. The fabric-lined clasp shoe brakes are supported on an extension bolted to the inside face of the journal box. The axles have a 2¼-in. hole bored through their entire length.

Folding front and rear doors are operated with National Pneumatic engines and are equipped with safety interlocking door control. Valves are provided to permit operation either by the one-man, two-man method or by one man and street fare collectors. To this end a Westinghouse selector valve is attached to the M-28 brake valve so that when the car is handled by one man the operator may control both front and rear doors from his position at the front end. A conductor's valve mounted on a stand at the rear end gives him control of the rear doors for two-man operation, and a valve on the outside permits a fare collector on the street to open the rear doors. Under normal one-man operation, both entrance and exit may be at the front and alighting passengers may also be allowed to leave at the rear. For this type of service the operator's selector valve gives him control of the rear door. When two men are on the car, entrance may be either at the rear or front and depending on whether the car is operated "pay enter" or "pay leave." If street fare collectors are available, passengers may be permitted to board at both the front and rear ends at congested points, subsequently leaving the car at the front end, as it continues under one-man operation.

These folding doors inclose inside step wells, built in a unit with the door frame. A continuous level floor extends throughout the length of the body. There are twelve stationary cross seats. Longitudinal seats are installed near the ends of the body to increase the standing area at these points. The seat opposite the rear door extends around the back end in circular form and increases the total seating capacity to 45 passengers. All seats are upholstered in rattan, which is stained a light green to improve the interior appearance.

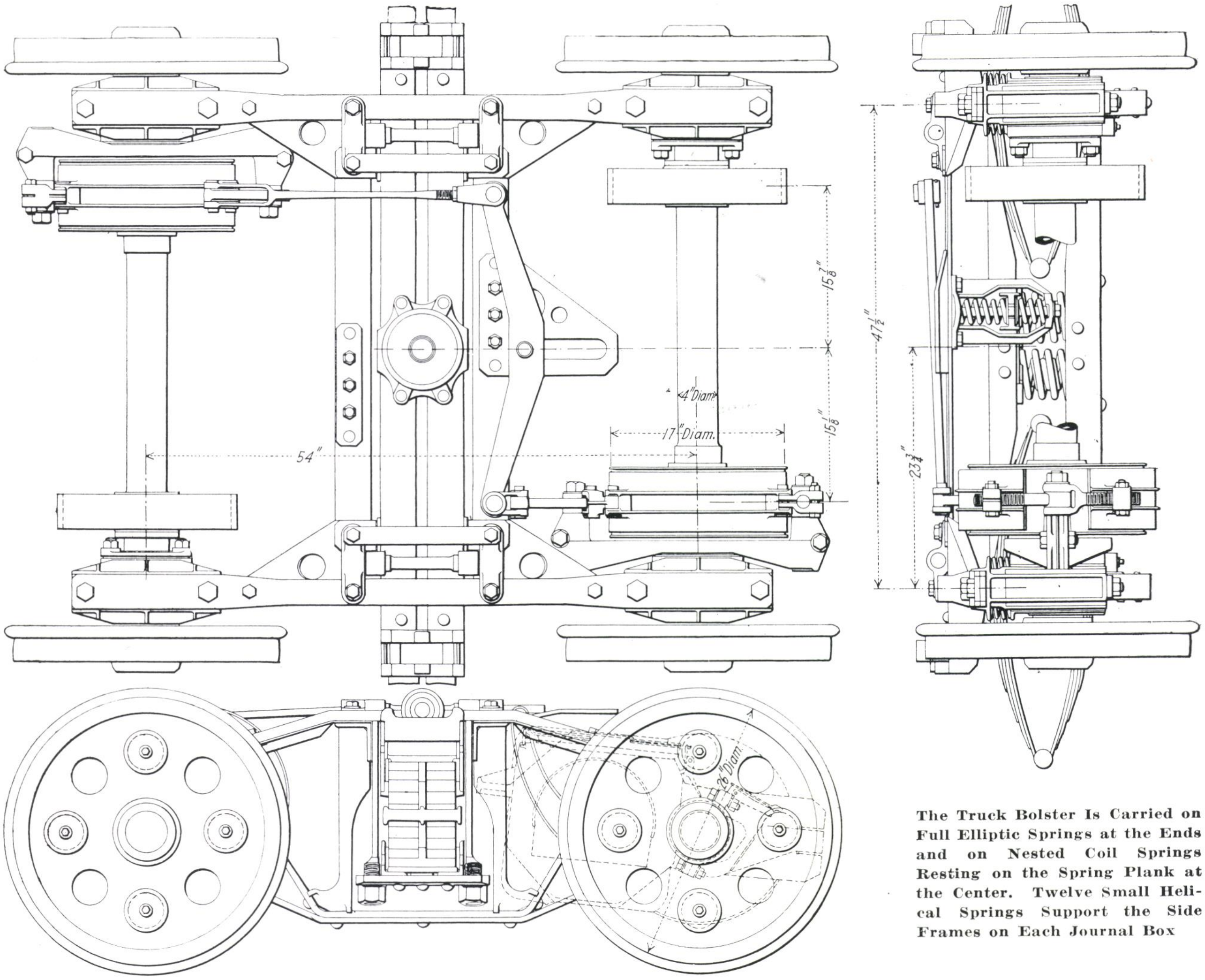
The vestibule belt rail is in line with that of the body, thus making the vestibule rail very low and giving the motorman a clear view of the track while seated. The K-35 controller is dropped down in the vestibule floor, to put the handle at a convenient height. The air-brake valve and door-control valve, together with light, compressor and other switches, are mounted in a cabinet which incloses the piping and apparatus at the front end of the car and finishes the interior of the vestibule. This arrangement provides a form of instrument board and places the control apparatus in a convenient position for the seated operator.

Accompanying drawings show the construction of the side framing and a general outline of the steel framing assembly. The side posts are formed of 1½-in. by ¾-in. by ⅛-in. channels set on 30-in. centers with the channel



A Combination of Cross and Longitudinal Seats Gives a Seating Capacity of 45. The Car Is 37 Ft. 6 In. Long Over All and Is Arranged for Single-End Operation

webs turned out. These extend continuously from side sill to side sill to form both the posts and roof supports; 2½-in. by 2-in. by ¼-in. angles are riveted across the backs of the side post channels along the bottom. Light-weight longitudinal channels, exposed on the interior of the car, are riveted to the side posts at the belt rail line. Between the posts and these channels, and also between the posts and the side sill angles, ⅛-in. by 10-in. steel plates are interposed. These extend longitudinally the length of the body. Steel braces ⅛ in. thick and of widths varying from 2½ in. to 5 in. are riveted diagonally between the side posts. The post channels and side sill angles are filled on the outside with oak furring strips to support ⅜-in. Haskelite side panels that finish the exterior.



The Truck Bolster Is Carried on Full Elliptic Springs at the Ends and on Nested Coil Springs Resting on the Spring Plank at the Center. Twelve Small Helical Springs Support the Side Frames on Each Journal Box

The upper sash is continuous and is constructed so that the upper rail forms the letterboard. This construction is clearly shown in the cross-section. Body bolsters are made of 5-in. 18.7-lb. heat-treated H-beams with ⅜-in. by 8-in. reinforcing plates top and bottom. The roof is of 5/16-in. Haskelite and the same material, 3/16 in. thick, is used for the headlining in the body. The vestibule hoods are finished on the interior with 3/16-in. Cornell board, formed to a smooth, curved shape. The body floor is double, consisting of a ⅝-in. thick lower cypress floor laid crosswise with 11/16-in. oak running longitudinally above it. These are separated by 3/16-in. Flaxolinum insulating material. At the front end of the car a bumper is built of oak reinforced with a steel plate and faced with a rubber buffer block.

The trucks are similar in design to the type developed after a number of years of experience in Minneapolis and described in the Sept. 29, 1923, issue of ELECTRIC RAILWAY JOURNAL, page 518. Two full-elliptic springs rest on a spring plank carried from the truck transom on swing links. These springs in turn carry the bolster, which is further supported on nested helical springs mounted at the center of the spring plank. Journal boxes with Hyatt roller bearings are mounted inside the wheels. The truck side frame rests on a group of twelve small helical springs above each journal box. Axles are 4-in. diameter with a 2¼-in. hole bored throughout their length. Each of the 26-in. diameter rolled steel wheels has eight 3-in. diameter holes drilled in the web to reduce weight and to help deaden the ringing sound of the wheels. Rubber washers of approximately 4 in. diameter and ½ in. thickness are bolted to the wheel web at four of these holes. Brake drums having a diameter of 17 in. are pressed on the axles and act in place of motor thrust collars. An adjustable toggle clasp brake surrounds this drum, the shoes being fitted with ½-in. by 6-in. brake lining. The brake mechanism is carried directly on a casting forming part of the journal box at this end of the axle, so that the shoe and drum are held in accurate alignment. This construction is shown in an accom-

DETAILS OF THE LIGHT-WEIGHT NOISELESS CAR ON TRIAL IN GRAND RAPIDS

Type of car	Single end, one-man, two-man
Length over all	37 ft. 6 in.
Width	8 ft. 6 in.
Height, rail over trolley boards	10 ft. $5\frac{1}{4}$ in.
Seating capacity	45
Weights:	
Body and equipment	12,705 lb.
Trucks	6,955 lb.
Electrical equipment	4,760 lb.
Air brake equipment	1,080 lb.
Total	25,500 lb.
Armature bearings	S. K. F. roller
Air brakes	General Electric, with CP-25 compressor, fabric-lined clasp shoe brakes on axle mounted drum, full safety devices and selector valve for door control.
Axles	Forged steel, 4-in. hollow
Buzzers	Consolidated
Conduit	Flexiduct for all auxiliary wiring and solar hose for control cables
Conductor's signal bell	Consolidated single stroke
Control	K-35-KK
Curtain fixtures	National Lock Washer
Curtain material	Pantasote
Destination signs	Hunter
Door operating mechanism	National Pneumatic
Energy saving device	Economy meter
Fare box	Woods
Fenders	H. B. Lifeguards
Floor insulation	$\frac{3}{16}$-in. Flaxolinum and tar paper
Gears	G.E. sound deadened
Gong	Electric Service Supplies Company, arranged for manual or pneumatic operation.
Hand brakes	Pittsburgh No. 35 drop handle
Hand straps	Sanitary celluloid (at rear of car only)
Heater equipment	Railway Utility truss-plank type
Headlights	Crouse-Hinds Golden Glow
Headlining	3/16-in. Haskelite in body and 3/16-in. Cornell board under hoods.
Interior trim	Mahogany
Journal bearings	Hyatt roller
Journal boxes	Inside wheels
Lamp reflectors	Special rectangular shape with art glass sides
Motors	Four GE-258
Motorman's seat	John A. Drum Co. D-1 revolving adjustable bus type
Paint	Sherwin-Williams enamel and Chicago varnish
Rear signals	Oskelite
Roof	Haskelite
Sanders	Light-Weight Car Co.
Sash and doors	Mahogany
Seats	Stationary
Seating material	Rattan, stained green
Stanchions	Brass, antique finish
Step treads	Kass
Track scraper	Root pneumatic
Trolley catchers	Ohio Brass
Thermostat	Railway Utility
Trolley base	Ohio Brass
Trucks	Smith No. 12
Ventilators	Railway Utility honeycomb type
Window wipers	Hand operated
Wheels	26-in. Illinois Steel Co. rolled steel
Warning signal	Bosch horn

panying drawing. As a general feature to improve the performance and reduce weight and noise, truck parts are machined to insure accurate and tight fits. The objective has been to approximate automobile workmanship so as to reduce to a minimum any tendency toward rattling or the production of noise due to the assembly of unfinished forged surfaces.

Four 25-hp. General Electric No. 258 motors drive the car. These have S.K.F. roller bearings on the armature shaft at both ends. A specially flexible type of motor suspension on the truck assembly is designed to reduce shocks in starting and stopping the car. These motors have sound-deadening gears, having webs cast with a hollow space which is filled with packed sawdust.

Another feature of the car is the internal illumination. Specially designed fixtures, shown in accompanying illustrations, give a pleasing semi-indirect illumination. The reflectors are ground so that the light rays will be accurately distributed to the reading surface of standing as well as seated passengers.

Each car is equipped with an Economy meter with inspection dial so that a careful study of the performance of the car and its equipment can be made. The principal items of equipment used, together with the general dimensions and distribution of weight, are given in the accompanying tabulation.

The Mule Car Has a Day in Nashville

The Nashville Railway & Light Company put on a big parade on Oct. 29 in Nashville, Tenn., demonstrating the 60 years of progress from the mule car to the railway parlor coach. Public inspection of the first mule car, first electric car and ten new cars parked on Eighth Avenue North between Broadway and Church lasted from 2:30 p.m. until 5 p.m. The parade, which boasted of a gold sword presented to Gen. Andrew Jackson, was led by the "President Andrew Jackson," a model of the ten new cars, costing $150,000. Distinguished Tennesseeans live again in the coach names, namely, Andrew Jackson, James Robertson, founder of Nashville; John Sevier, first Governor of Tennessee; President James K. Polk, and others. Each new car seats 44. They are finished in red, olive and white, have automobile-type brakes, wide, convenient doors and steps, leather seats. Gone for 37 years, the old mule car returned for a day and the occasion was a festive one.

ERJ Nov. 1926

November 6, 1926 ERJ E

De Luxe Cars Placed in Service in Chattanooga

The ten new railway coaches purchased by the Tennessee Electric Power Company, Chattanooga, Tenn., early in the year representing an investment of $150,000, were introduced to citizens of Chattanooga on Oct. 19.

The new coaches were assembled at Sixth and Broad Streets at 1:30. At 2 o'clock the coaches moved up in order and stopped in front of the Chamber of Commerce building. A fifteen-piece band was ready to lend a festive air to the occasion. E. D. Reed, manager of the Chattanooga district of the company, formally presented the new coaches to Commissioner Fred Frazier, representative of the city. After the preliminaries in the way of two or three short speeches the coaches were loaded to capacity for the maiden trip through the downtown sections.

City and county officials, directors and representatives of the chamber of commerce and the manufacturers' association, civic club delegates, press representatives and others were invited to be guests of the company on this occasion.

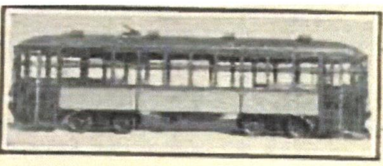
Led by the new coach "Chattanooga," which was on display at the recent American Electric Railway Association convention, the route of travel was south on Broad to Ninth, north on Market through the transfer station at Fifth Street, south on Market to Main to Central Avenue and return. Walter Cline took moving pictures of the parade. All ten coaches went into regular service on Wednesday morning.

The new coaches cost $14,000 each. They seat 45 passengers as compared with 36 to 40 on the present cars. They weigh 28,000 lb., or 14 tons, and are lighter than those now in use.

The following names have been given the coaches: "Chattanooga," "Chickamauga," "Missionary Ridge," "Sherman Heights," "Orchard Knob," "Fort Wood," "Cameron Hill," "Lookout Mountain," "Signal Point," "Cravens House."

ERJ 9-25-1926

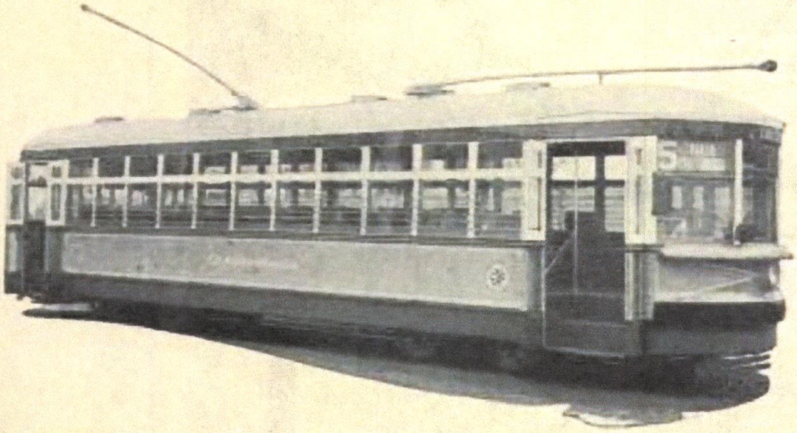
LIGHT WEIGHT NOISELESS



ELECTRIC MOTOR COACH

Modern Cars

for Chattanooga, Nashville and Evansville



Modern Light Weight Noiseless Double End Cars for Chattanooga, equipped with Smith Light Weight Noiseless Truck.
Seats 44, Length 40 ft. 3½ in., Weight 29,000. lbs.

Beautiful—Comfortable—Attractive—Economical

Chattanooga, Nashville and Evansville Properties of Hodenpyl, Hardy & Co., replace the old-fashioned heavy street car with this modern, more comfortable and attractive conveyance.

Grand Rapids Car, "Minnesota" of this type, seating 46 passengers, has operated 43,873 miles and averaged 1.65 K.W.H. per car mile.

10 for Chattanooga—10 for Nashville—13 for Evansville

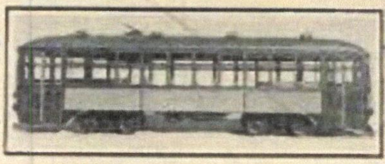
These Modern Cars Mean

Less Weight	More Seats
Less Noise	More Comfort
Less Power	More Public Co-operation
Less Maintenance	More Civic Pride
Less Platform Expense	More Interest in Street Railway
Less Accidents	More Regular Service
Less Service Interruptions	More Safety
Less Traffic Congestion	More Satisfaction
Less Competition	More Rides
Less Operating Costs	**More Revenue**

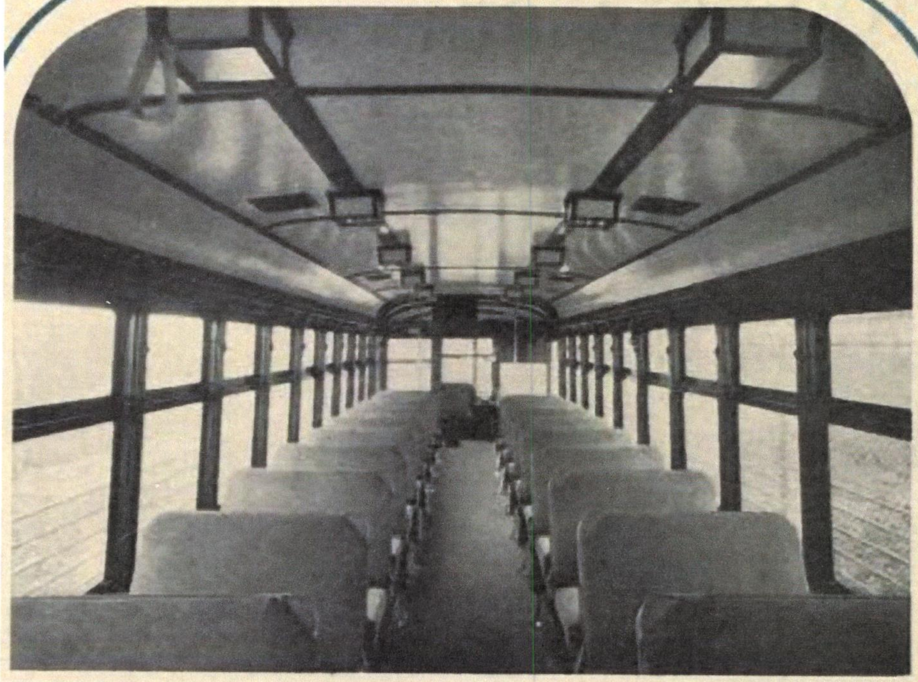
Manufactured by

IGHT WEIGHT NOISELESS ELECTRIC STREET CAR CO.
General Office: 1743 Illinois Merchants Bank Building
CHICAGO

LIGHT WEIGHT NOISELESS



ELECTRIC MOTOR COACH



Interior of Car "Chattanooga"

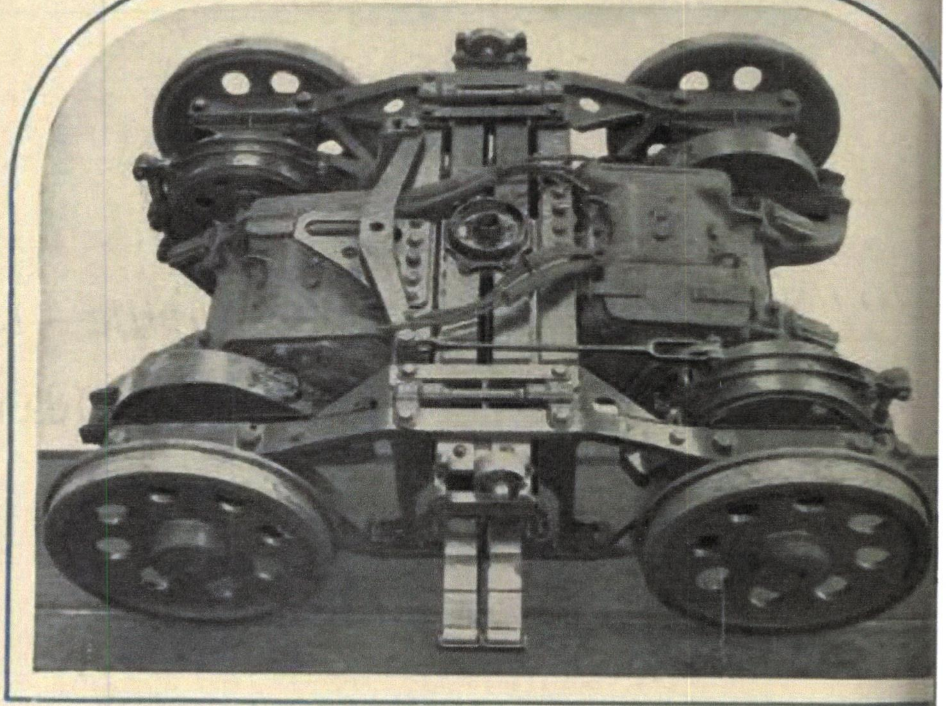
Beauty in Light Weigh Design

rge Saving in Power Consumption. mplete revision of street-car truck sign on scientific lines, *producing icient and economical results,* radilly changing and improving the oldhioned street-car truck.

at-treated steel and machined inchangeable parts, making a *superior ck* to any ever produced before.

uipped with *Hyatt Roller Bearings* d *concentric clasp axle drum brakes automotive type,* reducing power quired for starting, greatly improv coasting and providing fast, effint and noiseless braking with *great- safety and power economy.*

rge Saving in wheel mileage, brake es and car service labor for brake justment and inspection.



Smith Light Weight Noiseless Truck. Weight of Truck Complete, Without Motors, 3780 Pounds

Faster Acceleration, Coasting, Braking and Speed, Due to Ample Motive Power, Roller Bearings and Automobile Type of Brakes

LIGHT WEIGHT NOISELESS ELECTRIC STREET CAR CO.

General Office: 1743 Illinois Merchants Bank Building
CHICAGO

AVERY® M
PV119ED

Greatest Step Towards Re-establishing Earning Capacity of the Street Railway Industry

It will be interesting to know just what this Coach has done in five months' actual service in Grand Rapids—

Car Miles Operated	15,317
Passengers per Car Mile	7.8
K.W.H. per Car Mile	1.4
Miles per Hour, Schedule speed	9.5
Cost per Car Mile for Car Maintenance, Power and Platform Expense (one man)	10¢

Only ONE adjustment of Brakes in over 15,000 miles operation.

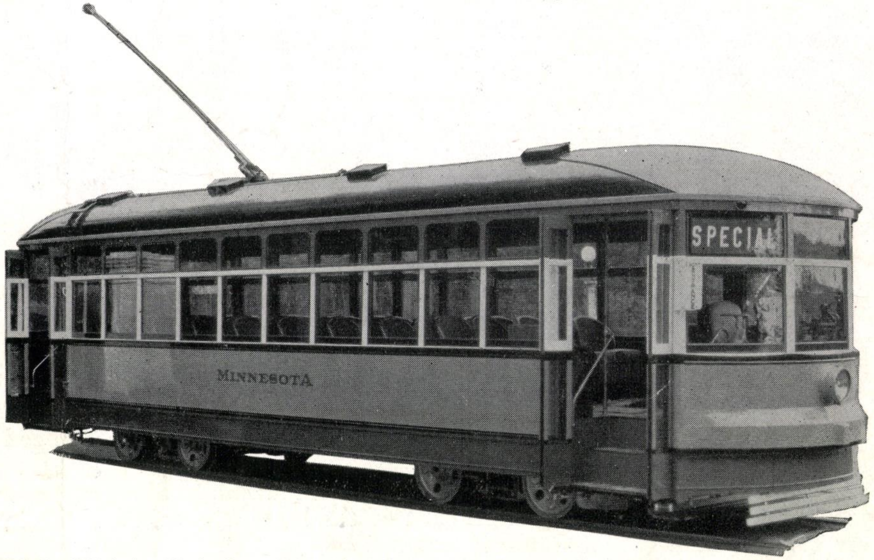
One of the trucks operating the entire 15,000 miles under this Coach in the above service can be inspected at our Exhibit on Arkansas Avenue.

At the request of the Grand Rapids Railway Company, this coach was originally equipped with Rattan Seats as part of their experiment as to the preference of the public for a transportation conveyance. After five months' operation it was determined that the DeLuxe type of Electric Motor Coach would definitely attract and increase traffic and in carrying out this program the present DeLuxe type of seats and flooring were installed, skirt added and car repainted in attractive colors.

LIGHT WEIGHT NOISELESS ELECTRIC STREET CAR CO.
GENERAL OFFICE: 1745 ILLINOIS MERCHANTS BANK BUILDING
CHICAGO

The
Light Weight Noiseless Electric Motor Coach

The Most Modern Development for Electric Railways

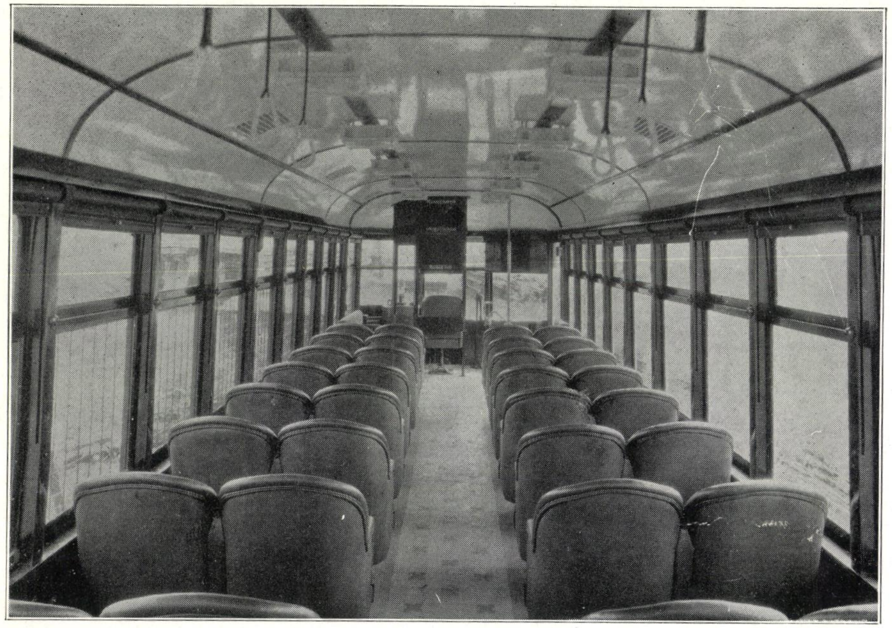


Light Weight Noiseless Electric Motor Coach for Grand Rapids Railway Co.

Mounted on Smith Light Weight Noiseless Trucks, with **Roller Bearings** and **Automotive Type Concentric Clasp Axle Drum Brake**

Faster Acceleration, Coasting, Braking and Speed Due to Ample Motive Power, Roller Bearings and Automotive Type of Brakes

MANUFACTURED BY
LIGHT WEIGHT NOISELESS ELECTRIC STREET CAR CO.
GENERAL OFFICE: 1745 ILLINOIS MERCHANTS BANK BUILDING
CHICAGO



Interior of Electric Motor Coach for Grand Rapids

THIS COACH has been designed to furnish a more comfortable and attractive light-weight public conveyance to replace the old-fashioned heavy street cars and satisfy the demand of the traveling public for faster and more frequent service and at greatly reduced operating costs.

The highest grade of materials and workmanship has been used throughout to give a finished product of the highest type, resulting in the lowest possible maintenance costs.

The entire under frame, girder plates, side posts and carlines are constructed of steel making a most rigid and durable construction.

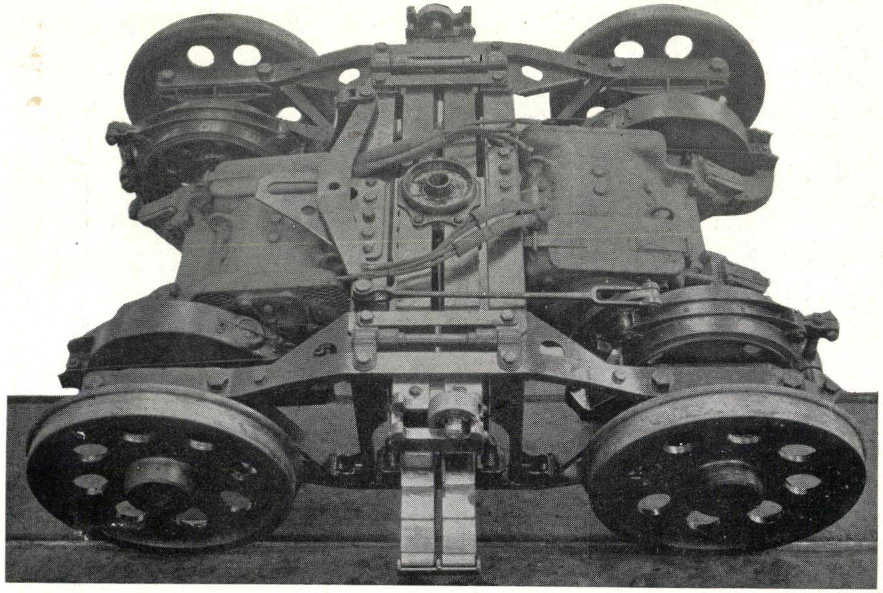
Floors are of double construction with flaxlinum insulation and covered with rubber interlocking tile, which with complete side and head lining insures greatest comfort and economical heating.

The Step Wells with wide treads afford easy and rapid loading and unloading, a feature which has received most favorable comment from the public in Grand Rapids.

The Front Vestibule presents an exceedingly attractive appearance—the operating Panel Board conceals all piping and miscellaneous control equipment—a comfortable seat is provided for driver who has excellent view ahead through the low front windows.

Low Seats of DeLuxe type with individual cushions and backs add to the extraordinary comfortable riding qualities of this Coach.

Special designed lights of pleasing appearance are fitted with prismatic glass to concentrate a soft light at proper reading height.



Smith Light Weight Noiseless Truck.

The Most Modern Development of Light Weight Truck for Electric Railways.

Large Saving in Power Consumption, Wheel Mileage, Brake Shoes and Car Service Labor for brake adjustment and inspection.

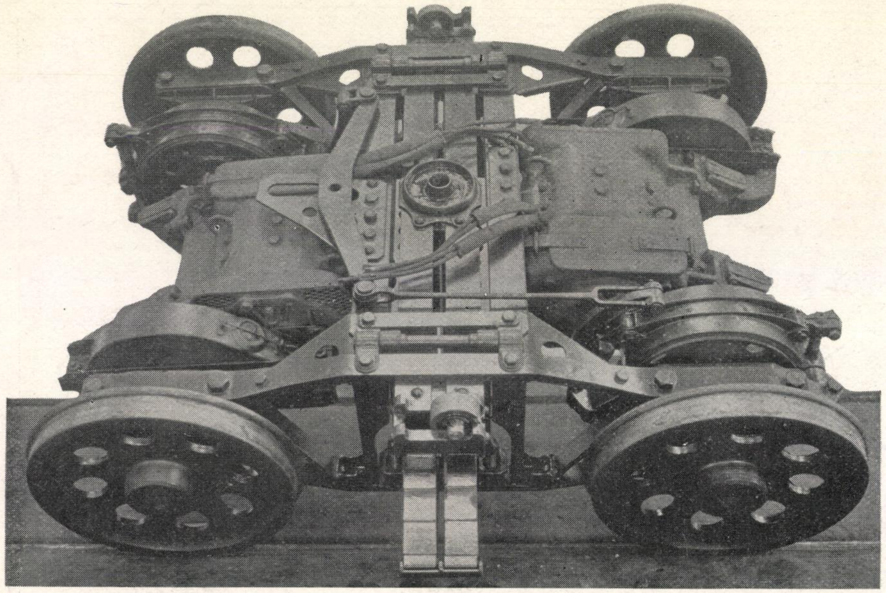
Only one brake adjustment in over 15,000 miles operation in Grand Rapids.

Constructed of heat treated steel and machined interchangeable parts.

Equipped with Hyatt Roller Bearings in Inside Journal Boxes which afford support for the Automotive Type of Concentric Clasp Axle Drum Brakes. These brakes insure the most positive and comfortable braking, with elimination of the old style brake shoes and resulting noise and inspection.

Easy Riding qualities accomplished by an exceptionally well balanced and graduated spring system, with two full elliptical springs and double set of spiral springs with a swinging spring plank, insuring proper spring support at all loads, allowing the bolster and car body to swing freely without jar or vibration in rounding curves—making a most easy riding coach.

Wheels are 26″ rolled steel, oil tempered, drilled with eight 3½″ holes in the web of each wheel, with noise subduers consisting of special rubber disks bolted in alternate holes in web. Hollow heat treated steel axles provide greatest strength with minimum weight.



Smith No. 12 Light Weight Noiseless Truck.

Smith Light Weight Noiseless Truck with Roller Bearings and Automotive Type Concentric Clasp Axle Drum Brake provides exceptional riding qualities, greatly reduced noise and great economies in operation.

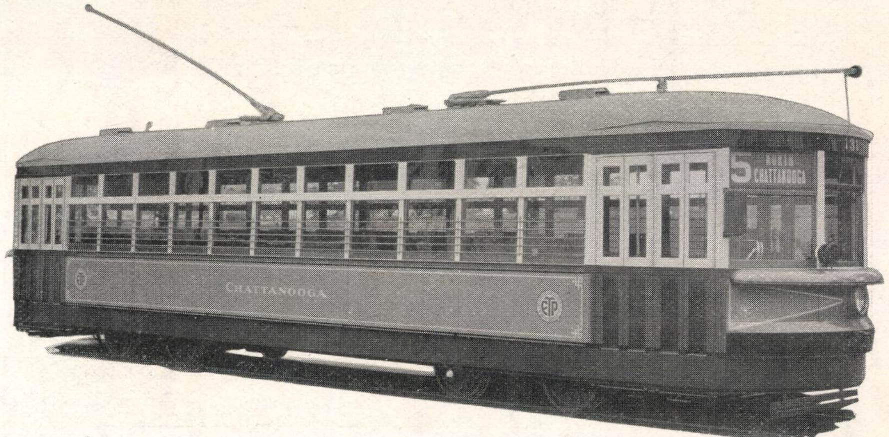
GENERAL SPECIFICATIONS

Car for Chattanooga	Car for Evansville
Double End	Single End
Double Truck	Double Truck
40′ 3½″ Long	37′ 6″ Long
8′ 6″ Wide	8′ 6″ Wide
10′ 1½″ High	10′ 1½″ High
2′ 6″ Post Spacing	2′ 6″ Post Spacing
44 Seats	46 Seats
H. & K. Reversible Seats	H. & K. Bucket Type Seats
Kemi-Suede Seat Covering	Kemi-Suede Seat Covering
Linoleum Floor Covering	Linoleum Floor Covering
4 G. E. 258F 25 H. P. Motors	4 G. E. 258F 25 H. P. Motors
D. H. 16 Air Compressor	C. P. 27 Air Compressor
Safety Car Devices	Safety Car Devices
Smith No. 12 Truck	Smith No. 12 Truck
Weight 29,000 Pounds	Weight 26,800 Pounds

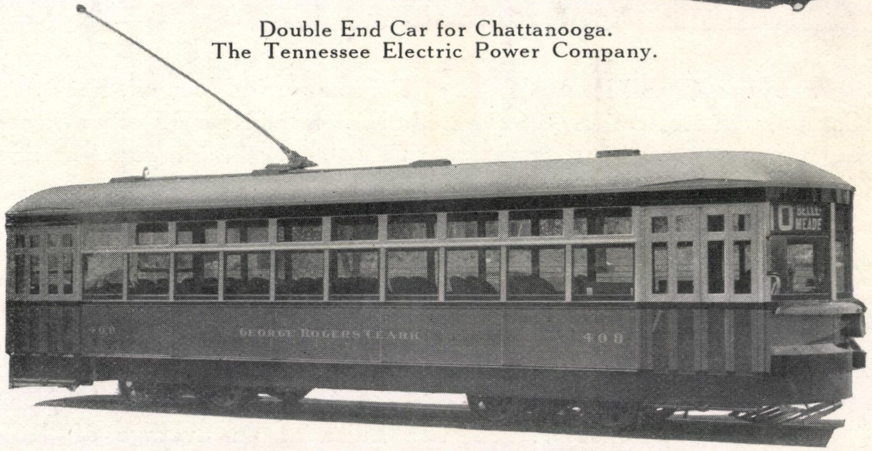
LIGHT WEIGHT NOISELESS ELECTRIC STREET CAR CO.
GENERAL OFFICE: 1743 ILLINOIS MERCHANTS BANK BUILDING
CHICAGO

Modern Light Weight Noiseless Cars

For Chattanooga and Evansville



Double End Car for Chattanooga.
The Tennessee Electric Power Company.



Single End Car for Evansville.
Southern Indiana Gas & Electric Company.

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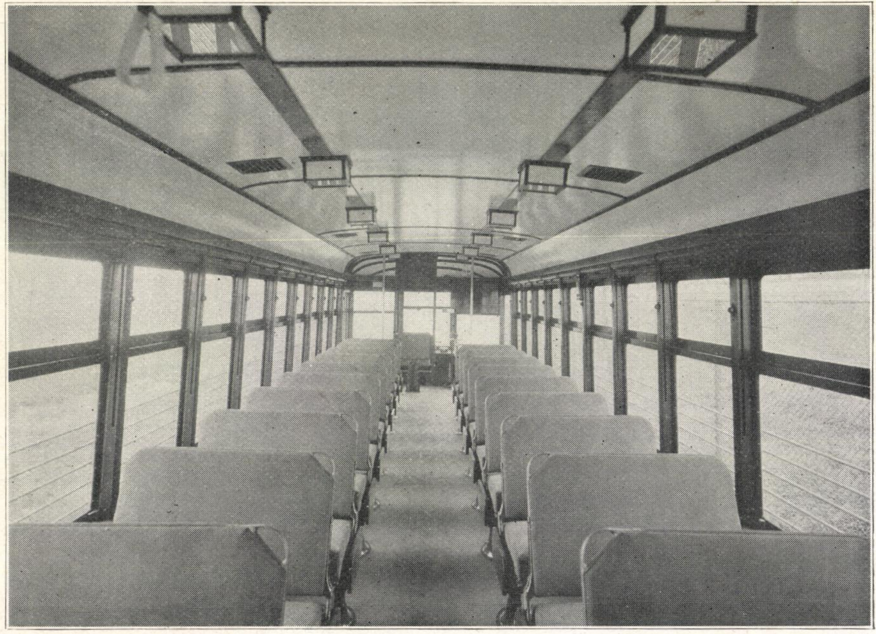
LIGHT WEIGHT NOISELESS ELECTRIC STREET CAR CO.
GENERAL OFFICE: 1743 ILLINOIS MERCHANTS BANK BUILDING
CHICAGO



Interior of Car for Chattanooga.

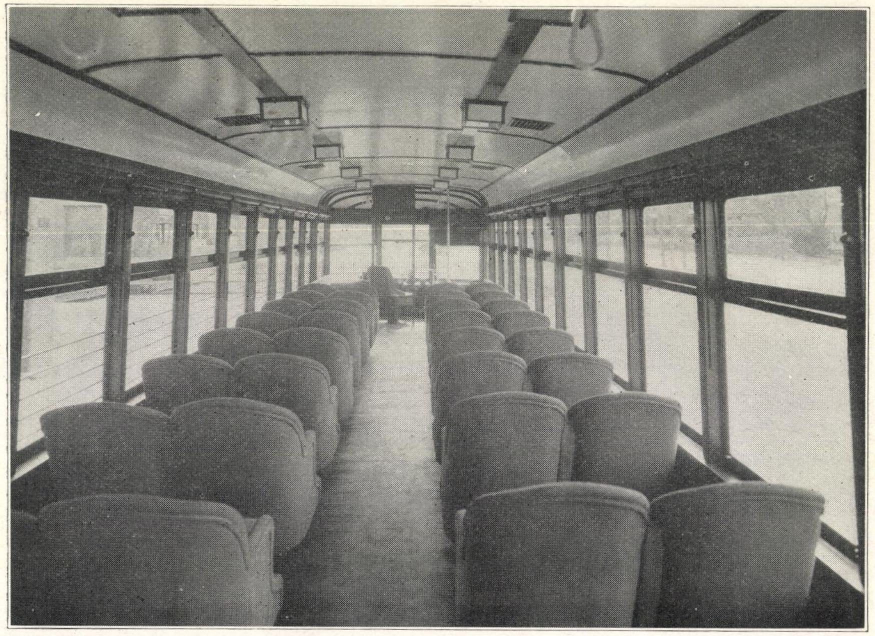
Last year, Grand Rapids Railway Company of Hodenpyl, Hardy & Company in connection with the Light Weight Noiseless Electric Street Car Company exhibited at Atlantic City the car "Minnesota" as one of the three test cars at Grand Rapids.

By the experience gained in Grand Rapids, Hodenpyl, Hardy & Company are now placing in operation these new cars at Chattanooga and Evansville, together with similar cars on a third property at Nashville, Tennessee.

Operating results in Grand Rapids to August 31, 1926, show car "Minnesota" operated 43,873 Car Miles at an average of 1.65 K. W. H. per car mile.

Special Features of These New Cars

Low deep spring cushion seats, equally distributed semi-indirect, lighting, double floors covered in Linoleum, double walls and ceiling, low front observation dash, and control cabinet enclosing all interior equipment; all add to the comfort and attractiveness of the interior of the car.



Interior of Car for Evansville.

Low spring cushion driver's seat, low front dash, instrument board, door control, new type low controller, and inside and outside mirrors; all especially designed to facilitate one-man operation.

Enclosed step wells with wide step treads provide for rapid entrance and exit with greatest ease and comfort.

The low stream line design accentuated with attractive color painting scheme, the skirt and the illuminated dash add to the attractiveness and beauty of car on the street.

Light weight with ample motive power, roller bearings and improved automotive type braking provide for greater ease and comfort; eliminating all necessity for jerking when starting and stopping car, while making fast schedule time with increased coasting.

CHATTANOOGA Car Names

131	Chattanooga
132	Sherman Heights
133	Orchard Knob
134	Missionary Ridge
135	Fortwood
136	Chickamauga
137	Lookout Mountain
138	Signal Point
139	Cravens House
140	Cameron Hill

NASHVILLE Car Names

President Andrew Jackson	600
President James K. Polk	
President Andrew Johnson	
James Robertson	
Sam Davis	
John Se[illegible]vier Sevier	
David Crockett	608
Samuel Huston	
John Ball	603 or 605
William Carroll	

EVANSVILLE Car Names

401	SIEUR DE VINCENNES
402	HUGH McGARY
403	PIERRE GIBAULT
404	
405	
406	
407	
408	George Rogers Clark
409	
410	JOHNATHAN JENNINGS
411	Francis Vigo
412	
413	

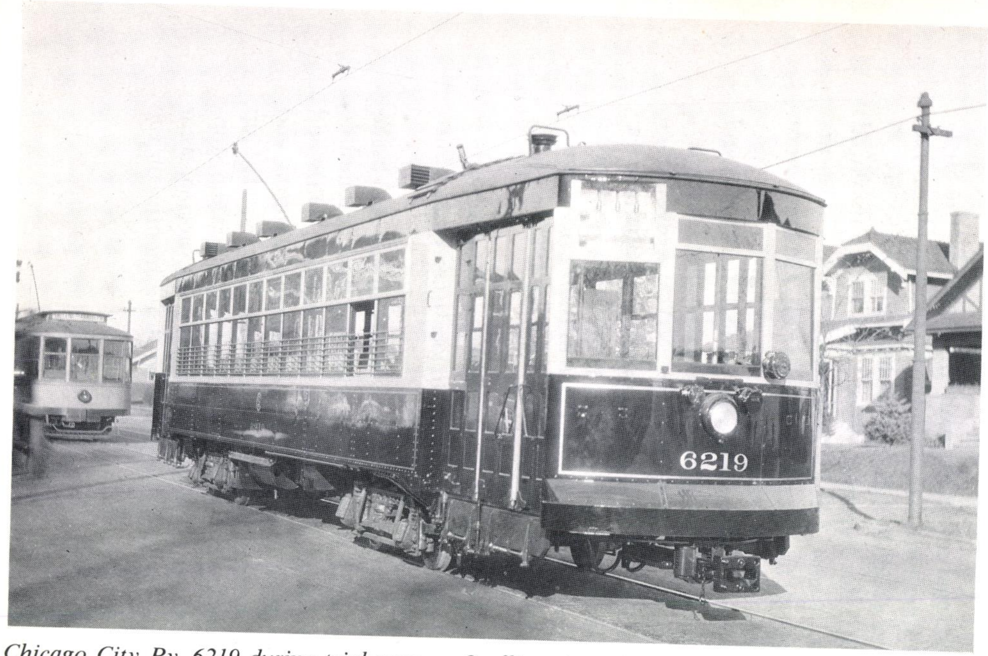
ERJ 7-10-1926

Southern Properties Will Soon Receive 33 Light-Weight Cars

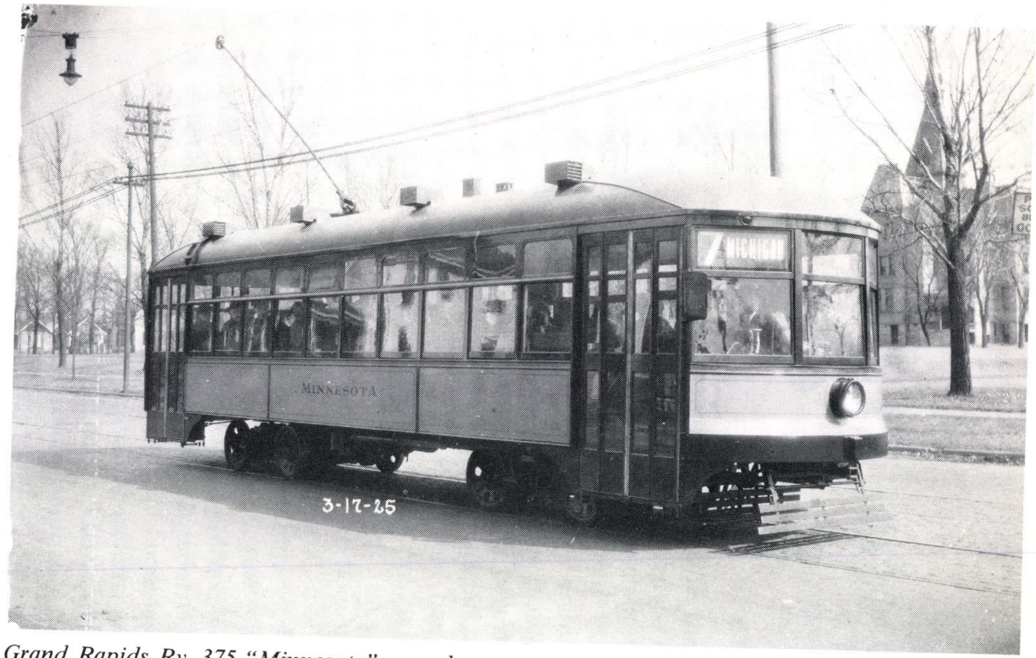
Delivery is expected to be made on July 25 of the ten cars recently ordered from the Light Weight Noiseless Electric Street Car Company, Chicago, Ill., by the Tennessee Electric Power Company of Chattanooga, Tenn. This company, one of three Hodenpyl-Hardy properties in the South which have placed similar orders for equipment, plans to place the new units in immediate service following delivery and the necessary testing. Ten cars of the same type will be delivered to the Nashville Railway & Light Company, Nashville, Tenn., about Aug. 15 and thirteen more, also of the same construction, to the Southern Indiana Gas & Electric Company, Evansville, Ind., about Sept. 1. The order for this rolling stock was placed on April 23, 1926. The cars will be for one-man, two-man operation and will have a seating capacity of 44.

Dimensions of the cars in the individual orders are not quite similar, nor is the brake equipment on the several cars. The ten Tennessee Electric Power cars are 8 ft. 6 in. wide and 40 ft. 3½ in. long. The Nashville cars are 8 ft. 2 in. wide and 39 ft. 6 in. long. The Southern Indiana units are 8 ft. 6 in. wide and 37 ft. 9 in. long. The cars in the first-named order are equipped with Westinghouse air brakes and DH-16 compressors. All of the other cars have Westinghouse brakes and CP-27 compressors. Safety Car Devices equipment is used throughout. Specifications follow:

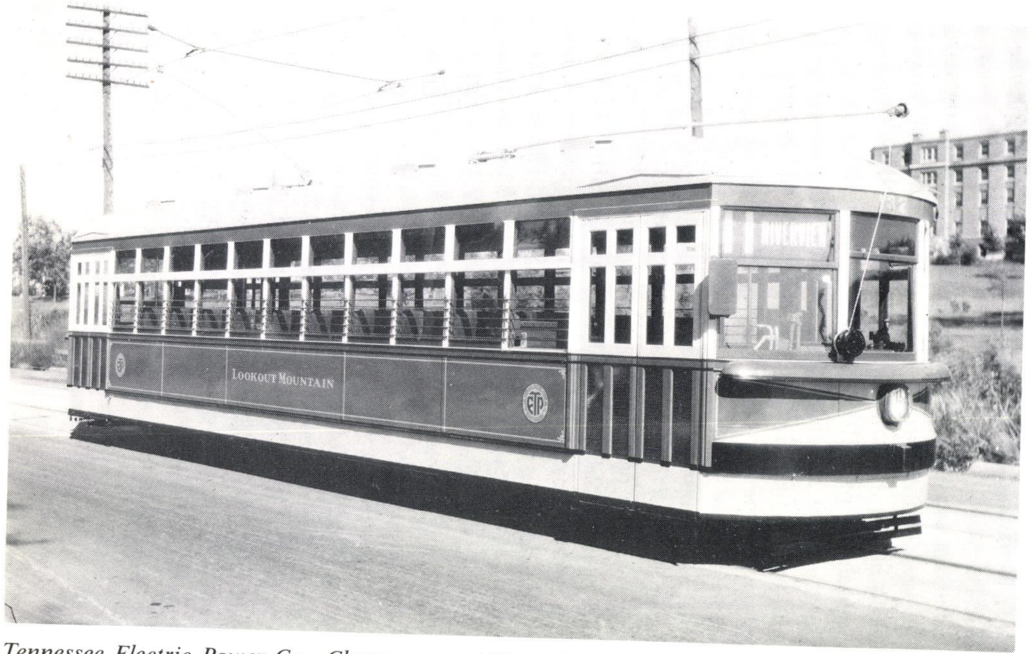
Weights:	
Car body	10,000 lb.
Trucks	7,000 lb.
Equipment	10,500 lb.
Total	27,500 lb.
Bolster centers, length	19 ft. 6 in.
Length over all	40 ft. 0 in.
Truck wheelbase	4 ft. 6 in.
Width over all	8 ft. 6 in.
Height, rail to trolley base	10 ft. 1 in.
Body	Steel frame, Haskelite covered
Interior trim	Mahogany
Headlining	Haskelite
Roof	Arch
Armature bearings	SKF roller
Axles	Lightweight Noiseless Co.
Bumpers	Car builders' standard
Car signal system	Faraday high tension
Car trimmings	Car builders' standard
Center and side bearings	Car builders' standard
Compressors	Westinghouse DH-16; General Electric CP-27
Control	K-75
Couplers	Lightweight Noiseless Co.
Curtain fixtures	National Lock Washer
Curtain material	Pantasote 85-77
Destination sighs	Hunter illuminated
Door-operating mechanism:	Consolidated Car Heating Co.
Fare boxes	Johnson Fare Box Co.
Fenders	Car builders' standard
Gears and pinions	G. E. noiseless type
Hand brakes	Pittsburgh, drop handle
Heater equipment:	Consolidated Car Heating Co.
Headlights	Golden Glow
Journal bearings	Hyatt roller
Journal boxes	Lightweight Noiseless Co.
Lightning arresters	G. E. aluminum cell
Motors	Four GE-258 K, inside hung
Finish	Enamel
Sanders	Car builders' standard
Sash fixtures	Car builders' standard
Seats	Hale & Kilbourn, Walkover type
Seating material	Kemi-Suede
Springs	Car builders' standard
Step treads	Kass safety tread
Trolley catchers	Ohio Brass and Keystone
Trolley base	Ohio Brass
Trolley wheels	Moore-Jones, 4 in. 5 in.
Trucks:	Smith No. 12, light weight, roller bearing
Ventilators	Car builders' standard
Wheels	26-in. rolled steel
Special devices, etc.:	Economy meters, exit treadle step control. Sangamo economy power meters used on Tennessee Power Company and Nashville cars.



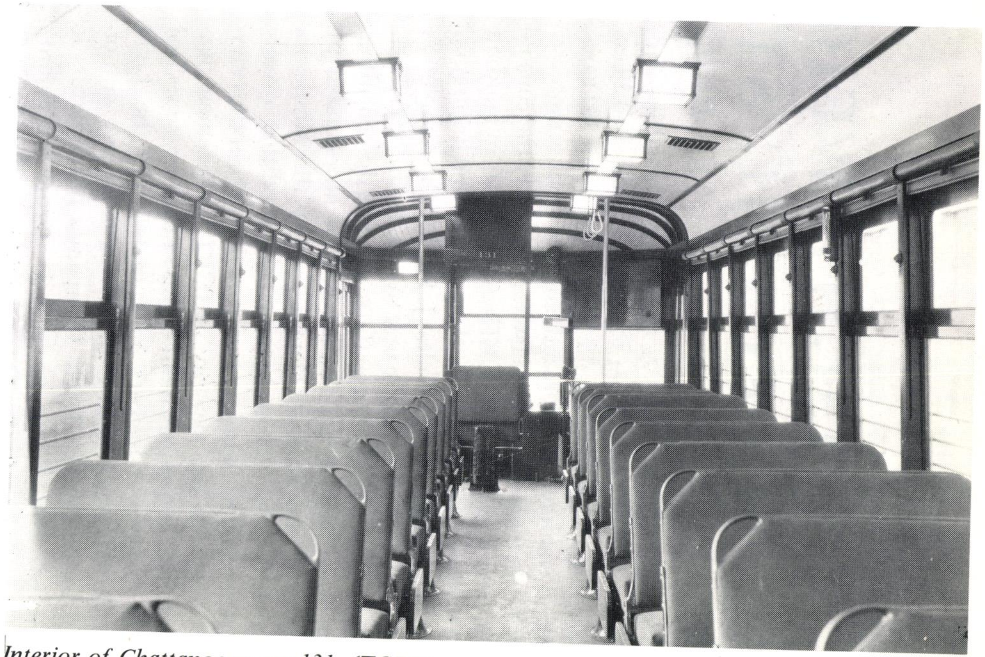
Chicago City Ry. 6219 during trial runs on Snelling Ave., St. Paul. (TCRT)


MICHIGAN
MINNESOTA
3-17-25

Grand Rapids Ry. 375 "Minnesota" on a demonstration run March 17, 1925. (TCRT)

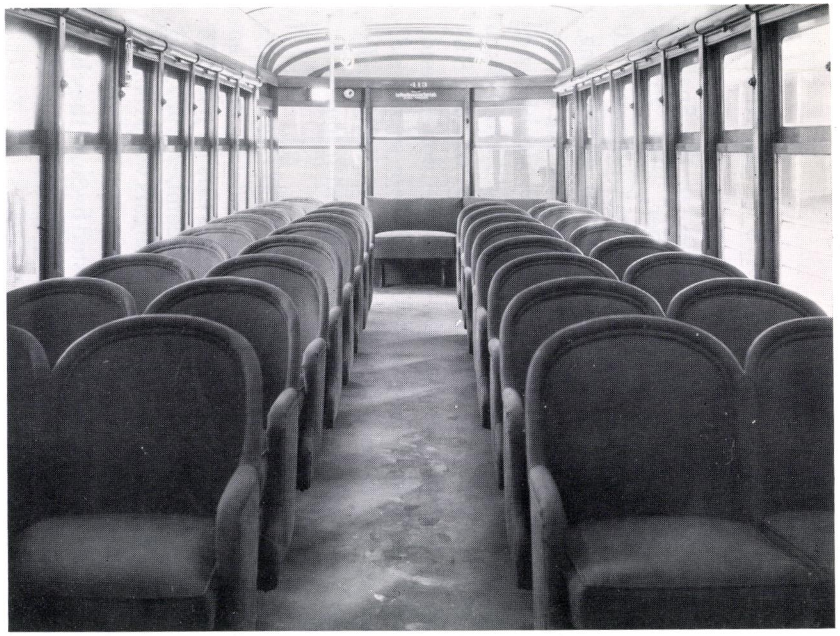

RIVERVIEW
LOOKOUT MOUNTAIN
ETP

Tennessee Electric Power Co., Chattanooga, 137 on Como Ave., St. Paul. (TCRT)

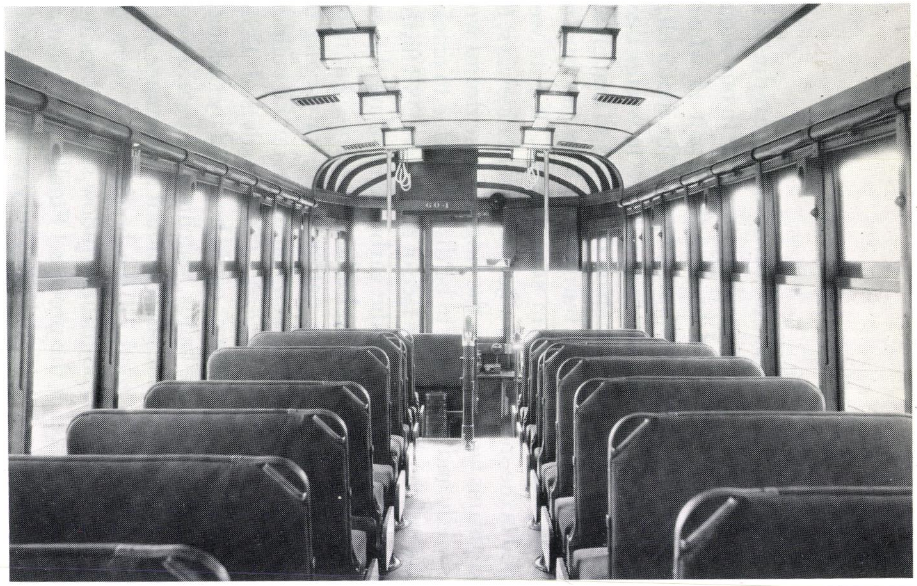


Interior of Chattanooga car 131. (TCRT)

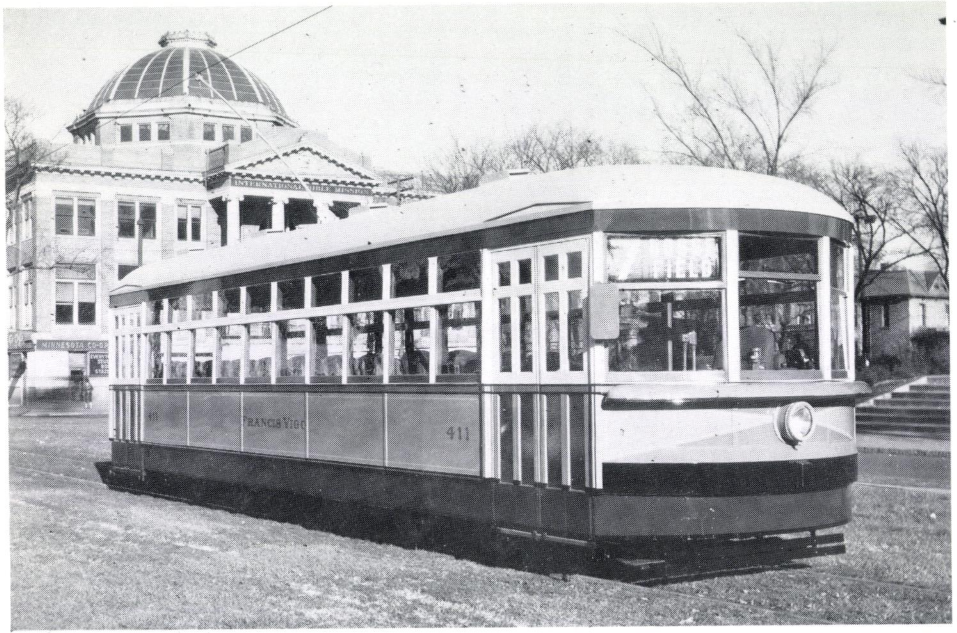
AVERY®
PV119ED



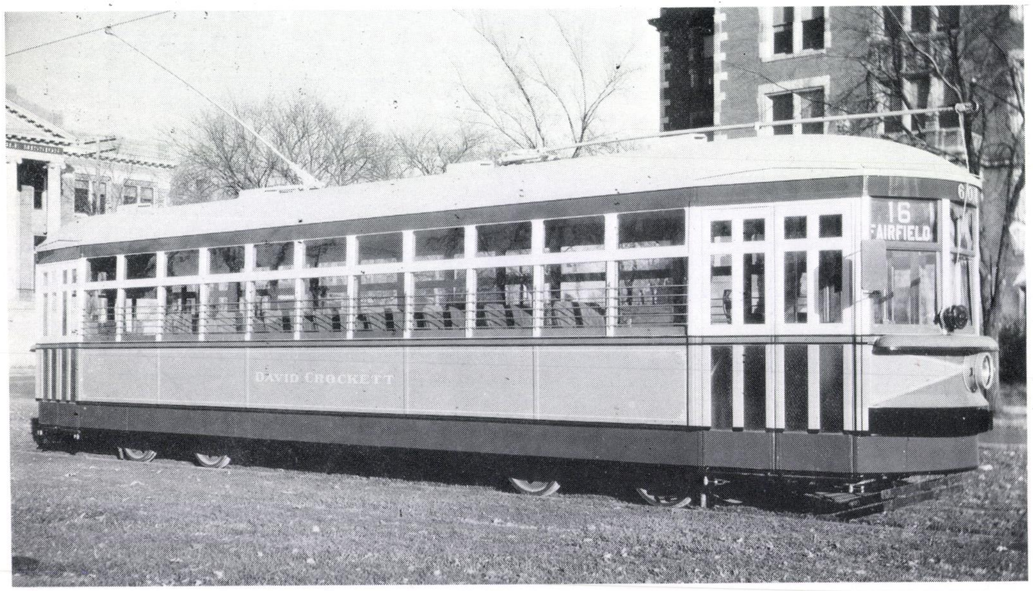
Interior of Evansville car 413 looking toward the rear. Only the single end cars had bucket seats, the double end cars being furnished identically to the Chattanooga cars. (TCRT)



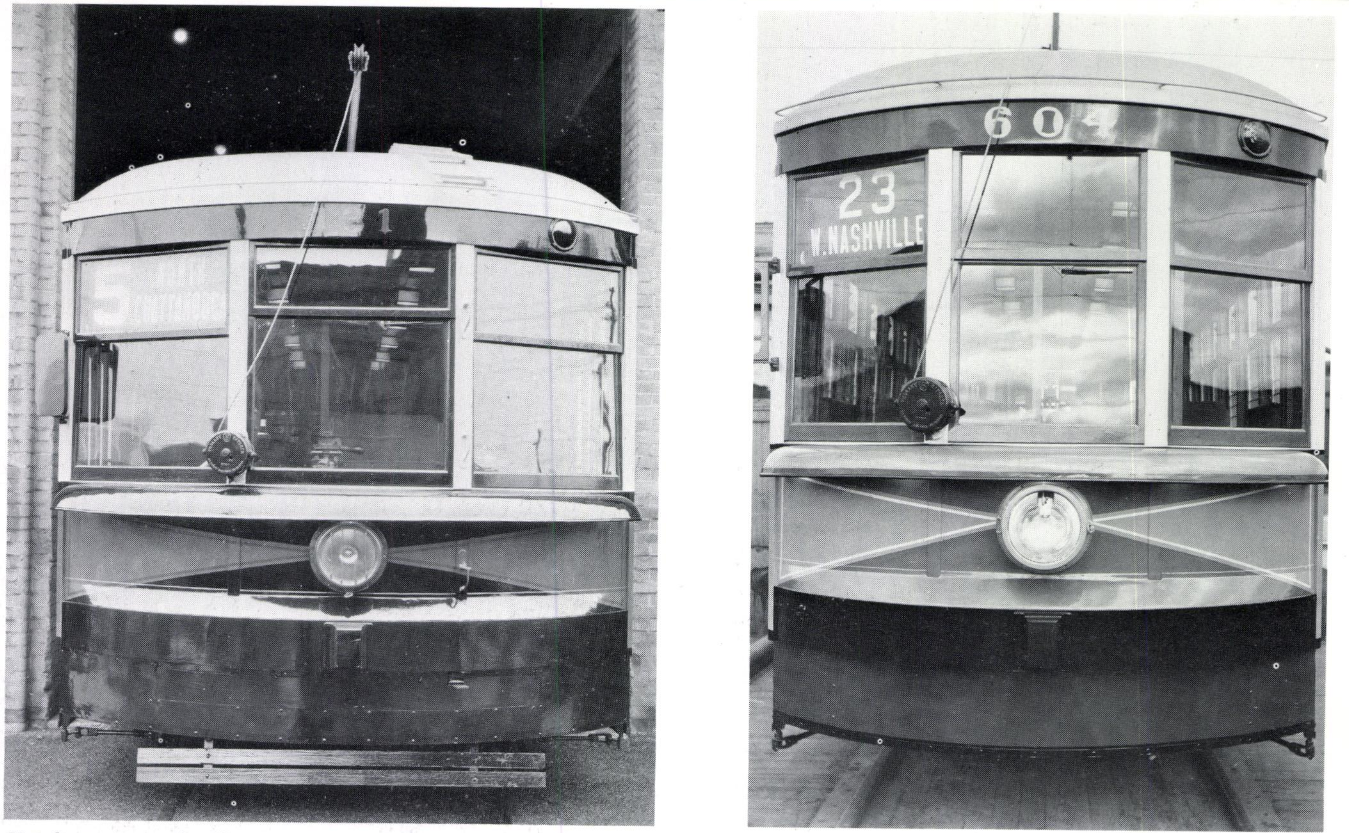
Interior of Nashville car 604. Note the inward cant of the steps and doors, a feature peculiar to the Nashville cars. (TCRT)



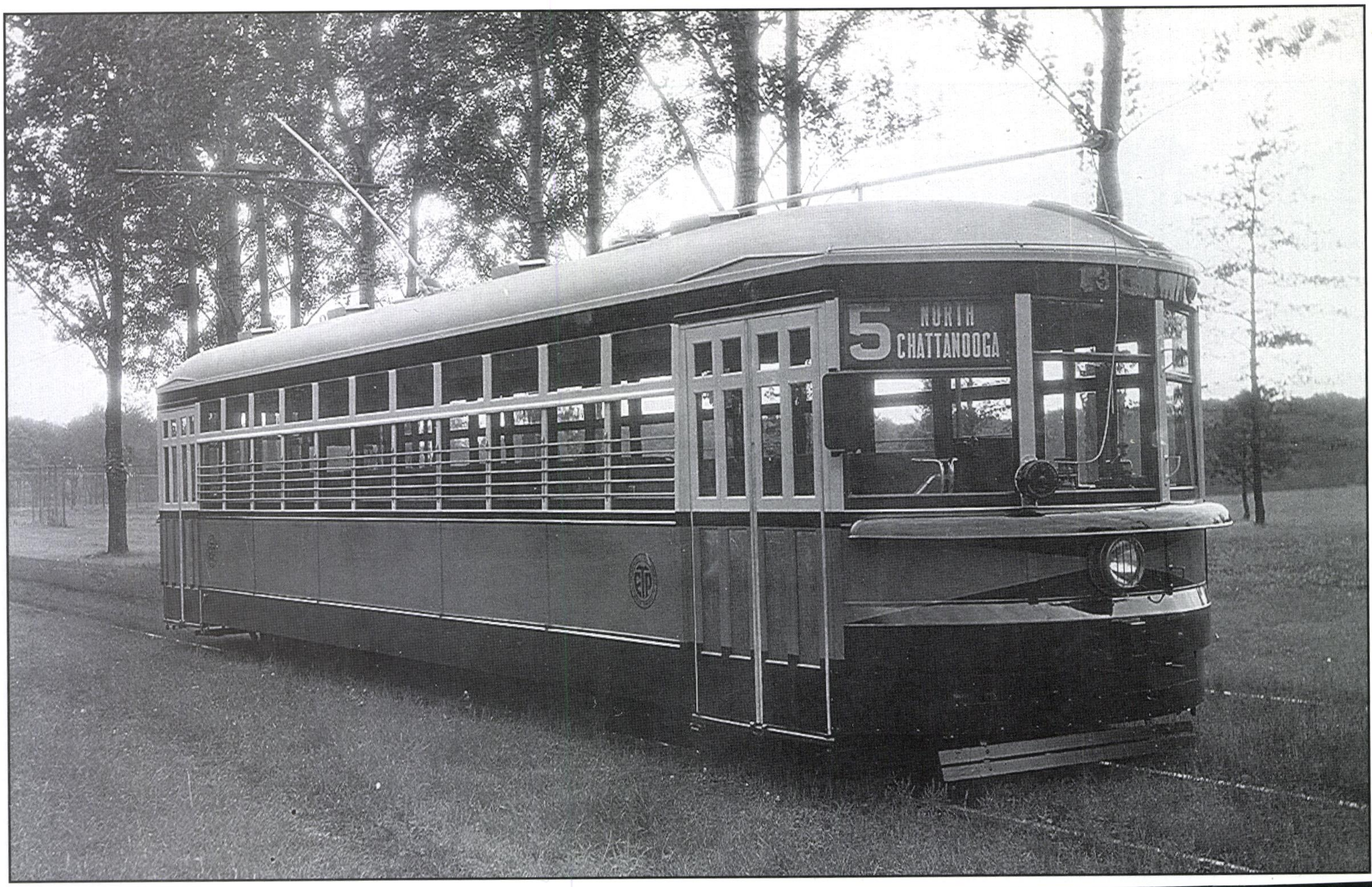
Southern Indiana Gas & Electric Co., Evansville, 411 at the main campus of the University of Minnesota. (TCRT)



Tennessee Electric Power Co., Nashville, 608 also at the main campus of the University of Minnesota. (TCRT)


1
5 NORTH CHATTANOOGA
604
23 W. NASHVILLE

Head-on views of a Chattanooga car, left, and a Nashville car, right, illustrating the platform design variations. We do know the color schemes of the Chattanooga cars: common to all cars were gray roofs, black and cream bumpers and trim, and gold lettering and striping. One variation consisted of blue and cream body with cream skirts, and the other variation tan and cream body with maroon skirts. (TCRT)


5 NORTH CHATTANOOGA

A. J. Challeen on Detroit United

ERJ 5-8-1926

New Superintendent of Equipment Progressive and Alert on Things Mechanical

A. J. Challeen has succeeded Hugh Savage as superintendent of equipment and shops for the Detroit United Railway, Detroit, Mich. In his new post Mr. Challeen has been devoting particular attention to improving the appearance of the rolling stock of the company. This he has sought to do through the use of various painting effects so as to give a streamline appearance to cars. As a result he has made some of the older type equipment particularly attractive. In addition to car maintenance, Mr. Challeen has also been devoting special attention to bus maintenance and to improving the riding qualities and appearance of the buses operated by the Detroit United Railway. This, of course, is the esthetic side of the matter. There is, however, another side, the purely utilitarian. Mr. Challeen knows that, too. He is particularly well informed in regard to car design and various types of car construction.

A. J. Challeen

Mr. Challeen was born in Rush City, Minn. His scholastic training included special courses in mechanical and electrical work at the University of Minnesota. He then entered electric railway work with the Twin City Lines. This was in 1908. In 1912 he was made general repair foreman in one of the outlying shops of the company. In 1921 he was advanced to general foreman of the principal repair shop of the Twin City Company. In March, 1925, he left the Twin City Company to take up duties as mechanical superintendent under A. L. Drum of the Light-Weight Noiseless Electric Street Car Company. Since June, 1925, he has been with the Detroit United Railway, of which Mr. Drum is manager for the receivers. Mr. Savage, who was succeeded at Detroit by Mr. Challeen, resigned from the property there to become connected with the Brooklyn City Railroad.

ERJ 1-29-1927

A. L. Drum, who has been acting as executive manager of the Detroit United Railway, has been appointed receiver by the Federal Court

ERJ 5-19-1928

A. L. Drum will be President of Eastern Michigan Railways, successor company under reorganization, to the Detroit United Railway

Some of the Twin City #12 Trucks were replaced by Brill 177-E Trucks. Photographs:

TEP Co. Nashville 602 1940

TEP Co Chattanooga 133 1946, 136 1947

(TEP Co Chattanooga 139 still had TC#12 1946)